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1. AGRICULTURE

1.1 Rht13- Drought resilient wheat gene

In news- A team of researchers discovered the new 'reduced height' or semi-dwarf gene called Rht13.

About Rht-13-

- A new drought-resilient semi-dwarf wheat gene can be grown in drier soil conditions and it has given new hopes of sowing the crop in water-limited environments.
- Reduced height gene means that seeds can be planted deeper in the soil, giving access to moisture, without the adverse effect on seedling emergence seen with existing wheat varieties.
- Since the 1960s and the Green Revolution, reduced height genes have increased global wheat yields because the short-stemmed wheat they produce puts more investment into the grains rather than into the stems and has improved standing ability.
- However, these genes bred into wheat also have a significant disadvantage of not working in drought-like conditions.
- When these varieties are planted deeper to access moisture in water-limited environments, they can fail to reach the surface of the soil.
- The newly discovered gene overcomes this problem of seedling emergence because the gene acts in tissues higher-up in the wheat stem.
- So, the dwarfing mechanism only takes effect once the seedling has fully emerged. This gives farmers a significant advantage when planting deeper in dry conditions.
- Additionally, the study found that the new semi-dwarfing gene may be able to withstand stormier weather too.

1.2 Rooibos tea

In news- Ahead of the Convention on Biodiversity's (CBD) COP15 in Montreal, negotiations may start for Rooibos tea industry.

What is Rooibos tea?

- The mountain bush rooibos is endemic to South Africa and is used to prepare a deep red brew with a deliciously unique flavour.
- The San and Khoi communities were the first to learn the health benefits of rooibos' needle-like leaves that grew widely on their land.
- Today, rooibos is a widely traded and exported commodity, sold to over 30 countries, with the United States and Europe being the biggest importers.
- Rooibos, devoid of caffeine and low in tannins, is a healthy alternative to coffee or tea, studies showed.
- It also comes loaded with antioxidants that can boost immunity, reduce risks of heart diseases, protect from viral infection and has anti-ageing properties.
- Rooibos is a broom-like member of the plant family Fabaceae that grows in South Africa's fynbos biome.
- The leaves are used to make a herbal tea that is called rooibos (especially in Southern Africa), bush tea, red tea, or redbush tea (predominantly in Great Britain).

1.3 Horticulture Cluster Development Programme

In news- The Union Ministry of Agriculture and Farmers Welfare has prepared the Horticulture Cluster Development Programme (CDP), for which a meeting was held under the chairmanship of Agriculture and Farmers Welfare Minister.

Key features of the programme-

- Horticulture cluster is a regional/geographical concentration of targeted horticulture crops, offering scope for specialisation in pre-production, production, post-harvest management, logistics, marketing and branding.
- These clusters provide growth and development opportunities to stakeholders including farmers/producers, traders, aggregators, agribusiness enterprises, logistic players, retailers, processors, exporters and other public and private operators.
- The main **objective of the government is to promote the Agriculture sector in the country and to increase the income of the farmers** by giving them a reasonable price for their produce, so the interest of the farmers should be paramount in the center of any programme/scheme.
- As per the Minister land available with Indian Council of Agricultural Research (ICAR) affiliated institutions within the identified clusters should be utilized for the implementation of this programme.
- The CDP will also create cluster-specific brands, while helping the economy, to integrate them into national and global value chains, thereby providing higher remuneration to farmers.
- The CDP will benefit around 10 lakh farmers and related stakeholders along the value chain.
- The **CDP aims to improve exports of targeted crops by about 20%** and create cluster-specific brands to enhance the competitiveness of cluster crops.
- It is a Central Sector programme implemented by the National Horticulture Board (NHB).

Note- India is the second-largest producer of horticulture crops globally, accounting for approximately 12% of the world's production of fruits and vegetables.

1.4 Arecanut

In news- Farmers have been urging Centre to control import of arecanuts and the Centre has said that import of arecanut is just 2 per cent of the total production in India.

About arecanuts-

- The areca nut is the **fruit of the areca palm** (*Areca catechu*), which grows in **much of the tropical Pacific** (Melanesia and Micronesia), South Asia, Southeast Asia, and parts of east Africa.
- It is commonly referred to as **betel nut**, not to be confused with betel (*Piper betle*) leaves that are often used to wrap it (a preparation known as betel nut chewing).
- **Various compounds present in the nut, including arecoline** (the primary psychoactive ingredient which is similar to nicotine), contribute to histologic changes in the oral mucosa.
- It is known to be a major risk factor for cancers (squamous cell carcinoma) of the mouth and esophagus.
- As with chewing tobacco, its use is discouraged by preventive efforts.
- Consumption by hundreds of millions of people worldwide – mainly of South Asian or Southeast Asian origins – has been described as a "neglected global public health emergency".
- The areca nut is not a true nut, but rather the seed of a fruit categorized as a berry.
- The areca nut contains the tannin, arecatannin and gallic acid; a fixed oil gum; a little terpineol; lignin; various saline substances; and three main alkaloids—arecoline, arecaidine, and guvacine, all of which have vasoconstricting properties.
- The betel leaf chewed along with the nut contains eugenol, another vasoconstrictor.
- Tobacco leaf is often added to the mixture, thereby adding the effect of nicotine.
- The cultivation of arecanut is mostly confined to 28° north and south of the equator.
- It grows well within the temperature range of 14°C and 36°C and is adversely affected by temperatures below 10°C and above 40°C.

Different terms for arecanut-

The term areca originated from Dravidian languages, cognates of which are:

- Malayala: romanized: aṭaykka

- Kannada: adike
- Tamil: aḍaikkāy

The term dates back to the 16th century when Dutch and Portuguese sailors took the nut from India to Europe. It is also known as Elaus in Palau.

Top producers- India, Bangladesh, Indonesia, Myanmar, Sri Lanka

2. ECONOMY

2.1 India's economic growth data for the second quarter of the 2022-23 or FY23

In news- The Ministry of Statistics and Programme Implementation (MoSPI) released India's economic growth data for the second quarter of the current financial year (2022-23 or FY23).

Key updates-

- India's gross domestic product or GDP grew by 6.3 per cent in Q2 (months of July, August and September) on a year-on-year basis.
- MoSPI also reported that India's Gross Value Added (or GVA) in Q2 grew by 5.6 per cent on a year-on-year basis.
- In Q2, manufacturing GVA declined by 4.3%.
- It is important to remember that between FY14 and FY17, manufacturing GVA grew by 31.3%.
- Indian manufacturing has been struggling to add value for the past six years and hence data from the Centre for Monitoring Indian Economy (CMIE) shows that jobs in the manufacturing sector halved between 2016 and 2020.
- The other big story is the almost 15 per cent growth in services such as trade and hotels, etc. This sector grew by over 26 per cent in the three years between FY17 and FY20.
- Another sector crucial for job creation, even though it is smaller in terms of overall contribution to India's GVA, is mining and quarrying and it too, has contracted by almost 3%.
- One positive story emerging from the GVA pertains to agriculture (along with forestry and fishing), which has done better than expected by growing at 4.6%.

What does GDP data show?

- **On the GDP side, the biggest engine of growth is private consumption expenditure. It typically contributes over 55% of India's total GDP.**
- Expenditures towards investments are the second biggest contributor to the GDP, accounting for around 33 per cent of the total.
- **Data shows that private consumption has grown by a healthy 9.7 per cent over the past year.**
- **The biggest surprise though from the GDP is the contraction in government final consumption expenditures.**
- While these types of expenditures **account for just about 10-11% of the GDP**, they have the ability to prop up an economy during tough times when people and businesses hold back spending.
- **The last component of the GDP equation is the Net Exports data.** Typically, since India imports far more than it exports, the **NX value is negative.**

GDP and GVA-

- GDP and GVA are the two main ways to ascertain the country's economic performance. Both are measures of national income.

- **The GDP measures the monetary measure of all “final” goods and services**— those that are bought by the final user— produced in a country in a given period.
- Broadly speaking there are **four key “engines of GDP growth”**. These are
 1. All the money Indians spent for their private consumption (that is, Private Final Consumption Expenditure or PFCE)
 2. All the money the government spent on its current consumption, such as salaries [Government Final Consumption Expenditure or GFCE]
 3. All the money spent towards investments to boost the productive capacity of the economy. This includes business firms investing in factories or the governments building roads and bridges [Gross Fixed Capital Expenditure]
 4. The net effect of exports (what foreigners spent on our goods) and imports (what Indians spent on foreign goods) [Net Exports or NX].
- **The GVA calculates the same national income from the supply side.** It does so by adding up all the value added across different sectors.
- **According to the RBI, the GVA of a sector is defined as the value of output minus the value of its intermediary inputs.** This “value added” is shared among the primary factors of production, labour and capital.
- By looking at the GVA growth one can understand which sector of the economy is robust and which is struggling.

How are the two related?

- When one is looking at quarterly data, it is best to look at GVA data because it is this which is the observed data. The GDP is derived by looking at the GVA data.
- The GDP and GVA are related by the following equation: $GDP = (GVA) + (\text{Tax es earned by the government}) - (\text{Subsidies provided by the government})$
- As such, if the taxes earned by the government are more than the subsidies it provides, the GDP will be higher than GVA.
- The GDP data is more useful when looking at annual economic growth and when one wants to compare the economic growth of a country either with its growth in the past or with another country.

2.2 India to receive a record \$100 billion in remittance in 2022

In news- According to the World Bank Migration and Development Brief India is expected to receive a record \$100 billion in remittance in 2022.

What is remittance?

- Remittance is derived from the word 'remit' which means 'to send back'.
- Remittance refers to money that is sent or transferred to another party, usually overseas.
- They are the private savings of workers and families that are spent in the home countries.
- The World Bank defines it as “the sum of worker’s remittances, compensation of employees, and migrants’ transfers as recorded in the IMF Balance of Payments. Workers remittances are current transfers by migrant who are considered residents in the source.”
- Remittances are a vital source of household income for low- and middle-income countries.

Key highlights-

- In its *Migration and Development Brief*, the World Bank has said **India’s remittance will grow 12 per cent from 7.5 per cent in 2021**, resulting in \$100 billion flow as compared to \$89.4 billion in 2021.
- It **attributed the feat to the large share of Indian migrants earning relatively high salaries** in the United States, United Kingdom and East Asia.

- However, the report has noted that despite reaching a historic milestone at \$100 billion and retaining its **position as the top recipient of remittances globally, India's remittance flows are expected to account for only 3 per cent of its GDP in 2022.**
- Led by strong performances in India and Nepal, the World Bank has predicted that remittance flows to South Asia this year will grow 3.5 per cent to reach \$163 billion in 2022.
- This is, however, a slowdown from the 6.7 per cent gain of 2021, reflecting the impact of an amalgam of external global shocks (inflation, slowing demand) in destination and source countries alike, as well as domestic factors.
- The overall remittance growth in South Asia reflects a disparity in individual country results; while India has gained 12 per cent and Nepal 4 per cent, other countries have reported an aggregate decline of 10 per cent, the report states.
- The report also says that despite global challenges in 2022, remittances to low- and middle-income countries will grow by 5% to \$626 billion.
- According to the World Bank the factors responsible for high remittance for India are gradual shift in destinations for Indian migrants aided by a structural shift in qualifications that helped them move into the highest-income-earner-category, especially in services.

Predictions for 2023-

- The growth of remittance flows into South Asia in 2023 is expected to slow to 0.7 per cent.
- The year 2023 will stand as a test for the resilience of remittances from white-collar South Asian migrants in high-income countries.
- Remittance flows in India, specifically, are predicted to decrease due to inflation and an economic slowdown in the United States.
- Decline in economic growth in the Gulf Cooperation Council (GCC) countries coupled with a fall in oil prices will further pull remittance flows down to all South Asian countries.

2.3 Remission of Duties and Taxes on Exported Products (RoDTEP) scheme

In news- Recently, the RoDTEP Scheme got extended to Chemicals, Pharmaceuticals and Articles of Iron & Steel.

About RoDTEP scheme-

- RoDTEP is based on the globally accepted principle that taxes and duties should not be exported, and taxes and levies borne on the exported products should be either exempted or remitted to exporters.
- This scheme **rebates/refunds the embedded Central, State and local duties/taxes to the exporters** that were so far not being rebated/refunded.
- This scheme is **applicable to all the sectors involved in the export of goods irrespective of their turnover, provided the country of manufacturing of the exported goods is India.**
- The rebate under the Scheme shall not be available in respect of duties and taxes already exempted or remitted or credited.
- **Products manufactured or exported at export-oriented units and special economic zones (SEZs) have been excluded from the scheme for the time being.**
- Under this scheme, **rebate is issued in the form of a transferable duty credit/ electronic scrip (e-scrip) which will be maintained in an electronic ledger** by the Central Board of Indirect Taxes & Customs (CBIC).
- The scheme is being implemented from 1st January 2021.
- **It replaced the ongoing Merchandise Exports from India Scheme (MEIS).**
- Scheme is implemented by Customs through a simplified IT System.

2.4 India Inequality Report 2022: Digital Divide

In news- Oxfam has published the India Inequality Report 2022: Digital Divide recently.

Key highlights of the report-

- Oxfam India's flagship publication - The India Inequality Report is produced yearly to bring the attention of the public, policy makers and the government to the ongoing inequality crises in the country.
- The 2022 issue of the inequality report highlights the extent of the digital divide in India and its impact on essential services such as education, health and financial inclusion.
- As per the report, the **reach of digital technologies remains limited to largely male, urban, upper-caste, and upper-class households and individuals.**
- **Eight per cent of the General caste have a computer or a laptop** whereas less than 1 per cent of the Scheduled Tribes (ST) and 2 percent of the Scheduled Castes (SC) have it.
- The report revealed a digital divide based on employment status where 95 per cent of the salaried permanent workers have a phone whereas only 50 per cent of the unemployed (willing and looking for a job) have a phone in 2021.
- It has found that **less than 32 percent of women in India own a mobile phone** - compared to over 60 per cent of men.
- Citing Observer Research Foundation data, the Oxfam report said **India accounts for half the world's gendered digital divide given that only a third of all internet users are women.**
- The report also **highlights stark digital inequality based on region, income, caste and education**, after analysing **data from the Centre for Monitoring Indian Economy (CMIE)** and the National Sample Survey (NSS).
- According to data presented in the report, **there are only 57.29 internet subscribers per 100 people in the country and that number is significantly lower in rural areas than urban.** In rural areas internet subscribers per 100 are less than 34 and is over 101 in urban centres.

What is the Digital Divide?

As defined by the OECD, the digital divide refers to "the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the internet for a wide variety of activities."

2.5 Razorpay to support credit cards on UPI

In news- Razorpay has become India's First Payment gateway (PG) to support Credit Cards on UPI.

Key updates-

- The platform announced its readiness to support Credit Card Transactions on Unified Payments Interface (UPI).
- Now, **customers of HDFC Bank, Punjab National Bank, Union Bank and Indian Bank will be the first to enjoy the benefits of this innovation.**
- This offering is in line with the National Payments Corporation of India (NPCI) and the Reserve Bank of India's (RBI) **latest innovation** in the digital space.
- Now Razorpay merchants can begin accepting credit card payments on UPI, with minimal changes to their existing setup.
- This is made possible in partnership with Axis bank.
- At present, UPI enables customers to make transactions through their bank accounts.
- However, linking credit cards with UPI will ensure that customers will no longer have to carry their credit cards with them at all times for payments.
- Founded by IIT Roorkee alumni, Razorpay aims to revolutionize money management for online businesses by providing clean, developer-friendly APIs and hassle-free integration.
- **UPI has recorded over 731 crore transactions in Oct 2022 alone** being used by more than 40% of Indians.

2.6 World Bank's new toolkit on making urban transport better for Indian women

In news- The World Bank launched a "Toolkit on Enabling Gender Responsive Urban Mobility and Public Spaces in India" recently.

About the toolkit-

- It aims to suggest ways to make public transport in Indian cities more inclusive of women's travelling requirements.
- The toolkit emphasises on the importance of integrating a gender lens in transport policies and infrastructures, making various recommendations on interventions that can help make urban transport safer, especially for women.
- It brings together 50 case studies of best practices and efforts from across the world, along with a special inculcation of the Indian context.
- It contains practical tools that can inform a wide set of policymakers as well as private or community-based organisations.

Four pillared approach-

The World Bank suggested a four-pillared approach to help address prevailing issues in urban transport for women. They are:

1st approach-

- There has to be greater effort made to understand the on-ground situation with a gender lens.
- Gender blind planning and infrastructure development leaves major gaps that specifically impact women but are often not overtly visible.
- Any new transport policy or infrastructure development must be preceded by an honest evaluation of issues concerning women.

2nd approach-

- Once prevailing issues are identified, policies and development plans must reflect the concerns of women.
- There must be more women in key institutions in charge of decision making.

3rd approach-

- The toolkit emphasises on building gender sensitivity and awareness among service providers through mandatory programmes and community action.
- Everyone from the bus conductor to local beat constables must be aware of concerns that women have and how to address them.

4th approach-

- Investment has to be made in better infrastructure and services with a focus on women-friendly design. E.g. while creating new bus stops is good, it would be even better if these bus stops were designed to be level with the floors of buses, adequate lighting, SOS buttons, and well-maintained washrooms.

2.7 India-China trade relations

In news- Amid fresh demands for snapping of trade ties with China in the wake of the Tawang skirmish, official data show that India's imports from the neighboring country spiked sharply post the Galwan clash of 2020.

Comparison of India's trade with China & the USA-

- China is India's second biggest trading partner after the United States.
- In 2021-22, India-China bilateral trade was 11.19 per cent of India's total merchandise trade. The US was just a notch above, with 11.54 per cent share.
- Until 20 years ago, China figured at the 10th position (2001-12) or lower.
- However, from 2002-03, it started an upward march and became India's top trading partner in 2011-12.
- While China and the US have both been India's top trading partners in recent years, there is a big difference between the trade with the world's two largest economies.
- While with the US, India had a trade surplus of \$32.85 billion during 2021-22, with China, it had a trade deficit of \$73.31 billion, the highest for any country.
- Apart from the US and China, the other eight countries and regions among India's top-10 trading partners during 2021-22 were UAE, Saudi Arabia, Iraq, Singapore, Hong Kong, Indonesia, South Korea, and Australia.
- Imports from China have skyrocketed since the beginning of this century (from 2001) but during this period, India's exports to China have increased at a snail's pace.

What does India buy from China?

- **The top commodities that India bought included:** electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers and parts; nuclear reactors, boilers, machinery and mechanical appliances and parts of thereof; organic chemicals; plastic and plastic articles; and fertilisers.
- **The most-valued Chinese item in the Indian import basket was the personal computer (laptop, palmtop etc),** which accounted for \$5.34 billion in 2021-22.
- It was followed by 'monolithic integrated circuits-digital', lithium-ion, solar cells and urea.
- **As far as the US is concerned, India imported petroleum crude, coking coal, LNG, diamonds, almonds, turbo-jets, etc.**

What China buys from India?

- **Among the top commodities China bought from India included: Ores, slag and ash;** organic chemicals, mineral fuels, mineral oils and products of their distillation, bituminous substances, mineral waxes; iron and steel (\$1.4 billion); aluminum and articles and cotton.
- Among single items, **light Naphtha was India's most valued export item to China** during 2021-22.
- **As far as the United States is concerned, diamonds, gold jewellery set with diamonds, vannamei shrimp, and turbo-jets** were among the top items imported from India.

2.8 New items from India received GI tags

In news- 9 new items from various states of India have been given the coveted GI Tags. With this the **total number of GI Tags of India comes to 432.**

The new items with GI tag-

- Some of the items include Gamosa of Assam, Tandur Redgram of Telangana, Raktsey Karpo Apricot of Ladakh, Alibag White Onion of Maharashtra etc.
- The **top 5 states** holding maximum number of GIs are Karnataka, Tamil Nadu, Kerala, Uttar Pradesh, Maharashtra.

The 'Gamosa' from Assam-

- This traditionally woven handloom product is known for its distinctive red border and floral motifs.
- It is mostly woven out of white threads with colourful and intricate inlays in red.
- There are different varieties woven for religious and auspicious occasions.

- Gamocha is also known as Bihuwaan, as it is an essential part of the Bihu festival of Assam.

Tandur Red Gram of Telangana-

- It is a local variety of pigeon pea which is mainly grown in the rainfed areas of the Tandur and nearby places in the state.
- As per the researchers, the fertile deep black soil with clay minerals specifically in Tandur Region along with huge limestone deposits can be attributed to the specific quality traits of Tandur Redgram.
- It contains about 24 percent protein, which is almost three times that of cereals, and is popularly known for its very good taste, and better cooking quality.

Raktsey Karpo- the organic sweetness from Ladakh-

- Raktsey Karpo, from the family of apricot, packed with vitamins and low on calories is rich in sorbitol – a natural glucose substitute that can be consumed by diabetics.
- The oil from its seed is known to relieve back aches and joint pain.
- These apricots are grown organically as individuals on trees or in clusters without using any chemical fertilisers.

Alibag White Onion of Maharashtra-

- It is known for its **unique sweet taste, no-tear factor**, and medicinal properties.
- The soil of Alibag taluka **has low sulphur content** & its geo-climatic conditions make it unique compared to other white onion-producing areas.
- **White onions are an excellent source of antioxidants** that contain more than 25 different types of flavonoids which lowers the risk of developing chronic diseases like diabetes, cancer, and heart disease.

What is a GI Tag?

- A geographical indication or GI is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.
- GI part of the intellectual property rights that comes under the Paris Convention for the Protection of Industrial Property.
- In India, Geographical Indications registration is administered by the Geographical Indications of Goods (Registration and Protection) Act of 1999.
- The registration of a geographical indication shall be for a **period of ten years, but may be renewed from time to time** in accordance with the provisions of this Act.
- The **first product to get a GI tag in India was the Darjeeling tea** in 2004.
- Geographical indications are typically **used for agricultural products, foodstuffs, wine and spirit drinks, handicrafts, and industrial products.**

2.9 Urban-20 (U20)

In news- Chief Minister of Gujarat has recently unveiled the logo, website and social media handles of Urban-20 or U20 in Gandhinagar as part of G20 programmes.

About Urban-20-

- U20 is an important **city diplomacy initiative**, which reinforces the role of cities in taking the sustainable agenda forward
- **Under the G20 presidency of India, Ahmedabad, a UNESCO World Heritage city, has been selected to host the U20 cycle.**
- U20 is a unique concept, which focuses on urban development.

- **Along with C40 (Climate 40) and United Cities and Local Governments (UCLG), City Sherpas' inception meeting will be held on February 9-10, 2023.**
- **Ahmedabad became a member of the C40 on June 30, 2022,** and has been a member of other global alliances like Global Covenant of Mayors for Climate and Energy and International Council for Local Environmental Initiatives (ICLEI).
- Urban-20 (U20), one of the Engagement Groups of G20, provides a platform for cities from G20 countries to facilitate discussions on important urban development issues, including climate change, social inclusion, sustainable mobility, affordable housing and financing of urban infrastructure and propose collective solutions.

2.10 Social Progress Index

In news- Economic Advisory Council-Prime Minister (EAC-PM) along with the Institute for Competitiveness and Social Progress Imperative has released the Social Progress Index(SPI) recently.

Key findings-

- SPI is a **comprehensive tool that can serve as a holistic measure of a country's social progress at the national and sub-national levels.**
- The index **assesses states and districts based on 12 components** across three critical dimensions of social progress - **Basic Human Needs, Foundations of Wellbeing, and Opportunity.**
- The index uses an extensive framework comprising 89 indicators at the state level and 49 at the district level.
- Based on the SPI scores, states and districts have been ranked under six tiers of social progress which are Very High Social Progress, High Social Progress, Upper Middle Social Progress, Lower Middle Social Progress, Low Social Progress and Very Low Social Progress.
- It presents a cross-section of data across states and districts and the focus is on looking at various tiers of development by grouping the states rather than the individual rankings of the selected states and districts.
- As per the index, **Puducherry, Lakshadweep and Goa emerged as best-performing states and Aizawl (Mizoram), Solan and Shimla (Himachal Pradesh) were the top three districts on SPI.**
- **Jharkhand and Bihar scored the lowest,** respectively.
- Mizoram, Himachal Pradesh, Ladakh, and Goa emerged as the best-performing states for the Foundations of Wellbeing.
- Within the dimension for the Access to Basic Knowledge component, Punjab had the highest component score of 62.92, while Delhi topped the list for Access to Information and Communication with a score of 71.30.
- For Health and Wellness, Rajasthan had the highest component score of 73.74. For Environmental Quality, the top three states belong to the northeast, namely, Mizoram, Nagaland, and Meghalaya.
- Tamil Nadu achieved the highest component score of 72.00 for the Opportunity dimension.
- Within this dimension, Andaman and Nicobar Islands have the highest component score for Personal Rights, while Sikkim has topped the list for Inclusiveness.

2.11 Social stock exchange

In news- The National Stock Exchange of India (NSE) has received in-principle approval from the SEBI to set up the Social Stock Exchange as a separate segment of the NSE.

What is the Social Stock Exchange (SSE)?

- An SSE allows the listing of non-profit or non-government organisations on stock exchanges, providing them with an alternative fund-raising structure.
- Setting up the SSE is on the lines of a proposal made by the government in the Union Budget of 2019-20 (April-March) to create a platform for listing social enterprises and voluntary organisations.

- Through this exchange, such **organisations can raise capital through equity or debt instruments.**
- To enable fundraising for not-for-profit organisations, the government had announced a **new security called “zero coupon zero principal”** under the Securities Contracts Regulations Act.
- This instrument can be publicly or privately issued by these organizations upon registering with SSE to raise funds.
- **Currently, the regulations allow minimum issue size as Rs 1 crore and minimum application size for subscription at Rs 2 lakh.**
- Subscription to this instrument would be like a philanthropic donation.
- **SSE provides a unified funding channel to listed social enterprises** that are at the bottom of the socio-economic pyramid.
- The **concept gained momentum, particularly in India during the pandemic**, as the need for social capital for enterprises and voluntary organisations became essential.
- **Countries like Brazil, Portugal, South Africa, the UK, Canada and Singapore already have established Social Stock Exchanges.**

2.12 Amrit Bharat Station Scheme

In news- The Indian railways is planning to modernize 1,000 small yet important stations under the new Amrit Bharat Station Scheme.

About the scheme-

- Under this scheme, the small stations would be identified not just for their footfalls but also based on the cities they cater to.
- It aims at preparing master plans of railway stations and implementing those in phases to enhance facilities including and beyond the minimum essential amenities and aim for the creation of roof plazas and city centres at stations.
- **The aim is also to identify developing cities with potential and envisage railway stations as city centres** that would link not just various parts of the city but also between different cities in the future.
- **The plan is to map everything connected to it**, bridges and different modes of transport.
- The idea is to **start modernizing stations in a cost-effective manner.**
- According to need, the divisional railway managers (DRMs) will take a call on modernisation works in a phased manner.
- A **special fund** will also be earmarked with the DRMs for this purpose.
- This is apart from the ambitious plan to revamp 200 big stations under a separate redevelopment programme.
- These stations will be redeveloped under what is being internally called the **"Khurda model of redevelopment"**.
- Khurda station in Odisha was modernized for Rs 4 crore with all contemporary amenities for passengers.

2.13 Joynagarer Moa

In news- Geographical Indication tag for Joynagarer Moa has been extended for 10-years.

About Moa-

- The moa is a popped-rice ball held together with fresh date-palm jaggery, extracted from the beginning of December till the end of February.
- Its manufacture is so synonymous with Joynagar, a settlement on the outskirts of Kolkata, that it earned the Geographical Indication tag of Joynagar Moa in 2015.
- But considering that the application for the recognition was submitted in 2012, the tag became valid from that year until 2022. Now, an extension has come through for another 10 years.
- This popular Bengal sweetmeat is available only during the colder months of the year.

- Said to date back to 1904, the *moa* is made of aromatic *khoi* - popped rice that is mixed with jaggery, sugar, cashew nuts and raisins.
- Its only drawback is that it has a short shelf life, lasting not more than five days without refrigeration.
- The high perishability has prevented it from being shipped abroad all these decades, and its export began, on a very small scale, only in 2020.
- Now the sweet's makers and IIT researchers are developing packaging material to increase shelf life from five days to two and a half months.

2.14 Draft national retail trade policy

In news- The Department for Promotion of Industry and Internal Trade (DPIIT) has sought the views of 16 departments and ministries on its draft national retail trade policy, which is aimed at the overall development of all formats of the sector.

Key highlights of the policy-

- The policy focuses on formulating strategies to provide a globally competitive and sustainable environment for the overall development of retail trade through targeted efforts.
- The objectives of the policy include
 - Ensuring easy and quick access to affordable credit.
 - Facilitating modernization and digitisation of retail trade by promoting modern technology and superior infrastructural support.
 - Development of physical infrastructure across the distribution chain.
 - Promotion of skill development and improve labour productivity.
 - Providing an effective consultative and grievance redressal mechanism for the sector.
- This will be the third industrial policy after the first in 1956 and the second in 1991.
- The retail industry is likely to see 10 per cent annual growth to reach about USD 2 trillion by 2032.
- India is the world's fifth-largest global destination in the retail space and a cohesive national retail policy can help generate 30 lakh more jobs by 2024.

2.15 Rules of Origin

In news- With the India-Australia interim trade deal set to kick off in December 2022, the Central Board of Indirect Taxes and Customs has notified the Rules of Origin.

Key updates-

- The notification, which relates to the eligibility requirement to claim the preferential customs duty on trade in goods, under the economic cooperation and trade agreement (ECTA), came into effect from December 29, 2022.
- Called the **Customs Tariff (Determination of Origin of Goods under the India-Australia Economic Cooperation and Trade Agreement) Rules, 2022**, the notification by the CBIC lays out the origin criteria based on which the product would be eligible for the preferential customs duty.
- India and Australia had in April, 2022 signed the ECTA, which is expected to cover 90% of the bilateral trade between the two.
- India will be offering preferential access to Australia on over 70% of its tariff lines, including lines of export interest to Australia which are primarily raw materials and intermediaries such as coal, mineral ores and wines.
- **Australia is the 17th largest trading partner of India and India is Australia's 9th largest trading partner.** India-Australia bilateral trade for both merchandise and services is valued at \$ 27.5 billion in 2021.

What are the rules of Origin?

- According to WTO, rules of origin are the criteria needed to determine the national source of a product.
- Their importance is derived from the fact that duties and restrictions in several cases depend upon the source of imports.
- There is wide variation in the practice of governments with regard to the rules of origin.
- The most comprehensive definition for rules of origin is found in the International Convention on the Simplification and Harmonization of Customs procedures (Kyoto Convention), which entered into force in 1974 and was revised in 1999.
- According to the Kyoto Convention, rules of origin means the specific provisions, developed from principles established by national legislation or international agreements ("origin criteria"), applied by a country to determine the origin of goods.

3. ENVIRONMENT

3.1 The Himalayan yak now a food animal

In news- The Himalayan yak has been accepted as a food animal by the scientific panel of Food Safety and Standard Authority of India (FSSAI), after recommendation from the Department of Animal Husbandry and Dairying (DAHD).

About Yak-

- The domestic yak (*Bos grunniens*), **also known as the Tartary ox, grunting ox or hairy cattle**, is a species of long-haired domesticated cattle found throughout the Himalayan region of the Indian subcontinent, the Tibetan Plateau and other places.
- It is **descended from the wild yak (*Bos mutus*)**.
- Wild yaks once ranged up to southern Siberia to the east of Lake Baikal, but became extinct in Russia around the 17th century.
- Today, wild yaks are found primarily in northern Tibet and western Qinghai, with some populations extending into the southernmost parts of Xinjiang, and into Ladakh in India.
- **The primary habitat of wild yaks consists of treeless uplands between 3,000 and 5,500 m (9,800 and 18,000 ft)**, dominated by mountains and plateaus.
- They are most commonly found in alpine tundra with a relatively thick carpet of grasses and sedges rather than the more barren steppe country.
- **In India, Yak is found throughout the Himalayan region-** Arunachal Pradesh, Sikkim, North Bengal, Uttarakhand, Himachal Pradesh, Ladakh and Jammu and Kashmir while wild Yak is found in Tibet.
- **Its physiology is well adapted to high altitudes, having larger lungs and heart than cattle found at lower altitudes**, as well as greater capacity for transporting oxygen through their blood, due to the persistence of foetal haemoglobin throughout life.
- **The yak plays a multidimensional socio-cultural-economic role for the pastoral nomads** who rear it mainly for earning their nutritional and livelihood security due to the lack of other agricultural activity in the higher reaches of the Himalayan region where it is difficult for animals except the yak to survive.
- Yaks are traditionally reared under a transhumance system which is primitive, unorganised and full of hardship.
- **According to a census carried out in 2019, India has some 58,000 yaks** – a drop of about 25% from the last livestock census conducted in 2012.
- **Yak milk is highly nutritious, rich in fat, contains essential minerals and has medicinal values.**
- **The products which are traditionally produced from yak milk are churkum, churpi, ghee and paneer.**
- Mostly consumed locally, **yak meat is known to be lean.**
- The Indian government established a dedicated centre for research into yak husbandry, the **ICAR-National Research Centre on Yak**, in 1989 at **Dirang, Arunachal Pradesh**, and maintains a yak farm in the Nyukmadung area.

- IUCN: Wild Yak-Vulnerable, CITES Appendix-I.

3.2 Niti Aayog report on Carbon capture & storage

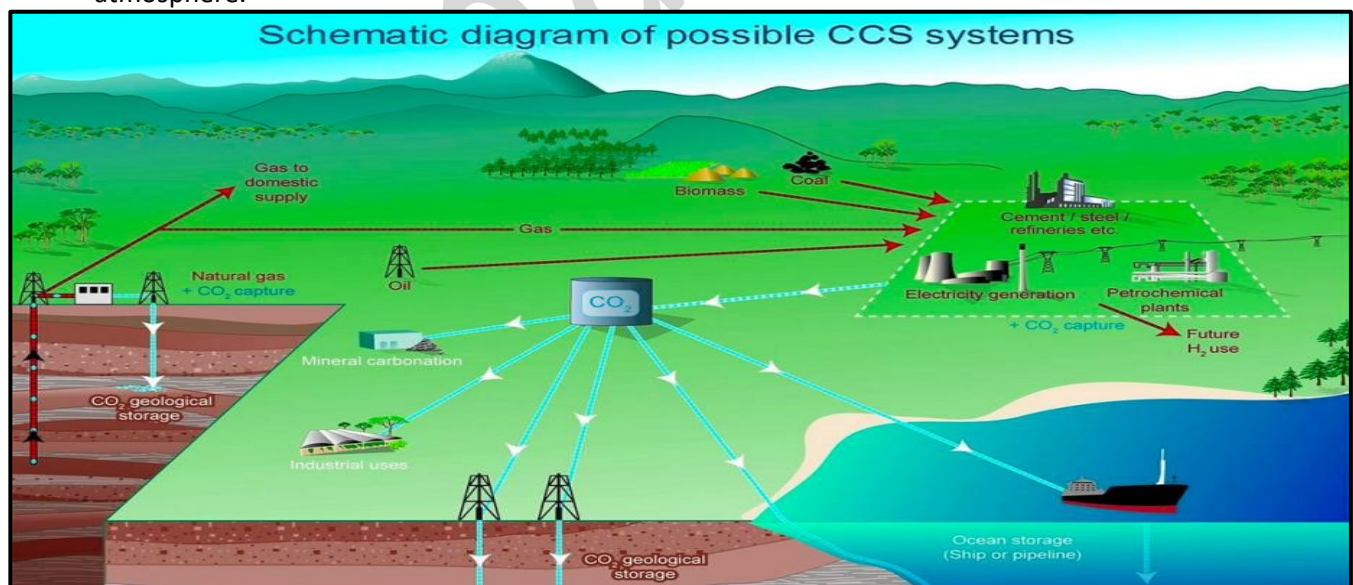
In news- NITI Aayog has recently released a study report on 'Carbon Capture, Utilisation, and Storage (CCUS) Policy Framework and its Deployment Mechanism in India'.

Key highlights of the report-

- The report explores the importance of Carbon Capture, Utilisation, and Storage as an emission reduction strategy to achieve deep decarbonization from the hard-to-abate sectors.
- As, India has updated its NDC targets for achieving 50% of its total installed capacity from non-fossil-based energy sources, 45% reduction in emission intensity by 2030 and taking steps towards achieving Net Zero by 2070, the role of CCUS becomes important as reduction strategy to achieve decarbonization.
- The report indicates that CCUS can provide a wide variety of opportunities to convert the captured CO₂ to different value-added products like green urea, food and beverage form application, building materials (concrete and aggregates), chemicals (methanol and ethanol), polymers like bio-plastics and enhanced oil recovery (EOR).

What is Carbon Capture & Storage?

- It is a **way of reducing carbon emissions**, which could be key to helping to tackle global warming.
- It's a **three-step process**: It involves the **capture** of carbon dioxide (CO₂) emissions from industrial processes, such as steel and cement production, or from the burning of fossil fuels in power generation.
- This carbon is then **transported** from where it was produced, via ship or in a pipeline, and **stored** deep underground in geological formations.
- The Intergovernmental Panel on Climate Change (IPCC) highlighted that, if we are to achieve the ambitions of the Paris Agreement and limit future temperature increases to 1.5°C (2.7°F), we must do more than just increasing efforts to reduce emissions – we also need to deploy technologies to remove carbon from the atmosphere.



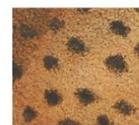
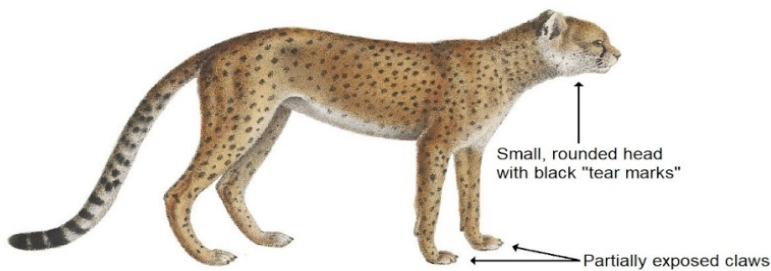
3.3 International Jaguar Day

In news- Every year, International Jaguar Day is observed on 29 November. It is Americas' largest wild cat and is an umbrella species for biodiversity conservation and an icon for sustainable development and the centuries-old cultural heritage of Central and South America.

About Jaguar-

- Jaguar, (*Panthera onca*), also called el tigre o tigre americano, **largest New World member of the cat family (Felidae)**, found from northern Mexico southward to northern Argentina.
- Its **preferred habitats are usually swamps and wooded regions**, but jaguars also live in shrublands and deserts.
- The jaguar is virtually extinct in the northern part of its original range and survives in reduced numbers only in remote areas of Central and South America; **the largest known population exists in the Amazon rainforest.**
- **This is the third largest Cat Predator in the World.**
- **Jaguars are often mistaken for leopards** but can be differentiated due to the spots within the rosettes on their coats.
- **While many cats avoid water, jaguars are great swimmers** and have even been known to swim the Panama Canal.
- Typical coloration is orange to tan, with black spots arranged in rosettes with a black spot in the centre.
- The jaguar resembles the leopard of Africa and Asia, but the leopard lacks the black centre spot.
- The base colour of the jaguar varies greatly from white to black.
- The jaguar is threatened by habitat loss, habitat fragmentation, poaching for trade with its body parts and killings in human–wildlife conflict situations.
- It has been listed as **Near Threatened on the IUCN Red List** since 2002.

Cheetah



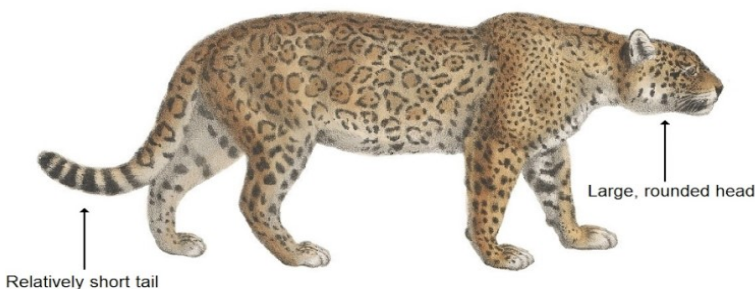
Solid black spots

Leopard



Small, densely packed rosettes

Jaguar



Large rosettes with central spot

3.4 Sangai Festival of Manipur

In news- The Prime Minister of India addressed the Manipur Sangai Festival via video message recently.

About the festival-

- Labelled as the **grandest festival in the state**, the Manipur Sangai Festival helps in promoting Manipur as a world-class tourism destination.
- The festival is organised by Manipur Tourism Department every year from 21 to 30 November.
- Celebrated over the past few years with the name of Tourism Festival, since 2010 this has been renamed as the Sangai Festival to stage the uniqueness of the shy and gentle brow-antlered deer popularly known as the Sangai.

About the Sangai-

- The sangai is an endemic and endangered subspecies of Eld's deer found only in Manipur, India.
- It is also the state animal of Manipur.
- Its common English name is Manipur **brow-antlered deer** or Eld's deer and the scientific name is *Rucervus eldii eldii*.
- Its original **natural habitat** is the floating marshy grasslands of the **Keibul Lamjao National Park (the only floating National Park in the world), located in the southern parts of the Loktak Lake**, which is the largest freshwater lake in eastern India.

3.5 Natovenator polydontus

In news- Recently, scientists said that the dinosaur, called Natovenator polydontus, lived about 72 million years ago during the Cretaceous Period.

About Natovenator polydontus-

- The expansive dinosaur group that included big predators such as T. rex also was populated by a number of oddballs, weirdos and outcasts.
- A newly described dinosaur from Mongolia – the size of a goose and looking a bit like one, too – fits that description.
- The scientists have found that it was built like a diving bird with a streamlined body while possessing a goose-like elongated neck and a long flattened snout with a mouth bearing more than 100 small teeth.
- It almost surely was covered in feathers.
- While it was a cousin of speedy little predator Velociraptor, **Natovenator was adapted to a semi-aquatic lifestyle in a freshwater ecosystem**, perhaps floating on rivers and lakes, paddling with its front limbs, and using its flexible neck to catch fish and insects or diving underwater to capture its prey.
- **Its well-preserved remains – a skeleton about 70% complete – were unearthed in the Gobi Desert**, which over the decades has been a treasure trove for dinosaur fossils.
- **Natovenator is part of the dinosaur group called theropods**, sharing traits including bipedalism – best known for large meat-eaters including Tyrannosaurus, Tarbosaurus and Giganotosaurus.
- Not many of the dinosaurs are called “non-avian” (not the birds), are known to have lived a semi-aquatic lifestyle.
- A close relative of Natovenator named Halszkaraptor, described in 2017, lived a similar lifestyle at roughly the same time in the same region. Both had a very bird-like appearance and were closely related to the bird lineage.
- There were various diving birds during the Cretaceous, including North America’s Hesperornis, which reached about 6 feet (1.8 meters) long, but none are known from the area Natovenator inhabited.

3.6 Project Great Indian Bustard (GIB)

In news- Hearing a plea to protect the endangered bird Great Indian Bustard (GIB), the Supreme Court of India recently asked if a 'Project GIB', on the lines of 'Project Tiger', could be launched.

About Great Indian Bustard-

- GIBs are the **largest among the four bustard species found in India** – the other three being MacQueen's bustard, lesser florican and the Bengal florican.
- Being terrestrial birds, they spend most of their time on the ground with occasional flights to go from one part of their habitat to the other.
- Today the bustard is restricted to isolated pockets in Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Madhya Pradesh and Rajasthan (shared with Pakistan).
- Among the heaviest birds with flight, GIBs prefer grasslands as their habitats.
- The terrestrial birds spend most of their time on the ground, feeding on insects, lizards, grass seeds, etc.
- GIBs are considered the flagship bird species of grassland and hence barometers of the health of grassland ecosystems.
- These birds are often found associated in the same habitat as blackbuck
- Among the **biggest threats to the GIBs are overhead power transmission lines**. Due to their poor frontal vision, the birds can't spot the power lines from a distance, and are too heavy to change course when close. Thus, they collide with the cables and die.
- It has been categorised as **critically endangered** by the IUCN.

Great Indian Bustard: Conservation efforts-

- The Supreme Court in April 2021 ordered that all overhead power transmission lines in core and potential GIB habitats in Rajasthan and Gujarat should be made underground.
- The government has started a project, titled 'Habitat Improvement and Conservation Breeding of Great Indian Bustard-An Integrated Approach', for five years from the Compensatory Afforestation Fund Management and Planning Authority (CAMPA) for conservation and breeding of the GIB.
- Also, in 2015, the Centre had launched the GIB species recovery programme. Under this, the Wildlife Institute of India (WII) and Rajasthan forest department jointly set up breeding centres where GIB eggs harvested from the wild were incubated artificially.

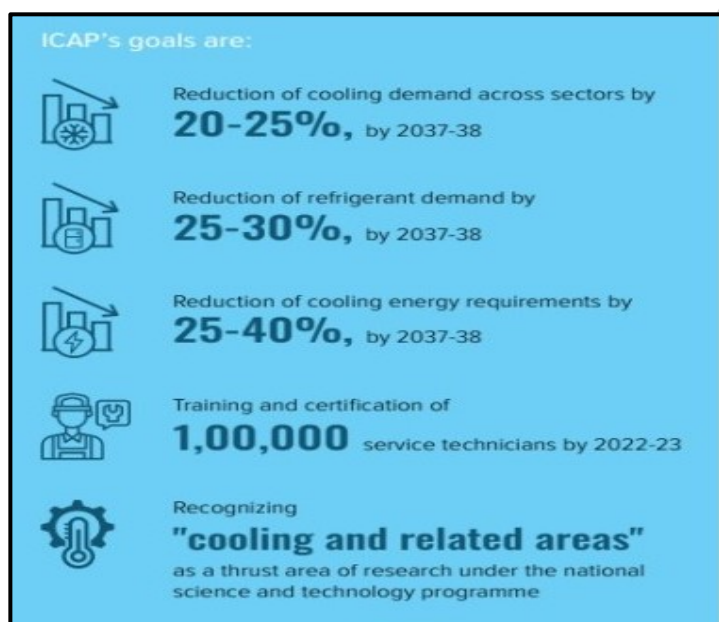
3.7 Climate Investment Opportunities in India's Cooling Sector report

In news- World Bank has released a Climate Investment Opportunities in India's Cooling Sector report recently.

Key highlights of the report-

- The report suggests a sustainable roadmap for cooling that has the potential to reduce 300 million tons of carbon dioxide annually by 2040.
- **By 2030, over 160-200 million people across the country could be exposed to lethal heat waves annually.**
- Around 34 million people in India will face job losses due to heat stress related productivity decline.
- On food security, the World Bank said the **current food loss due to heat during transportation is close to \$13 billion annually.**
- By 2037, the demand for cooling is likely to be eight times more than current levels.
- In 2019, India launched the **India Cooling Action Plan (ICAP)** to provide sustainable cooling measures across various sectors, including indoor cooling in buildings and cold chain and refrigeration in the agriculture and pharmaceuticals sector and air-conditioning in passenger transport. Its aim is to reduce the demand for cooling by up to 25 per cent by 2037-38.
- **The new World Bank report proposes a roadmap to support the ICAP's new investments in three major sectors:** building construction, cold chains, and refrigerants.

- Adopting climate-responsive cooling techniques as a norm in both private and government-funded constructions can ensure that those at the bottom of the economic ladder are not disproportionately affected by rising temperatures.
- The report suggested that India's affordable housing programme for the poor, the Pradhan Mantri Awas Yojana (PMAY), can adopt such changes on scale.
- **The report also recommended private investments in district cooling technologies.** These generate chilled water in a central plant which is then distributed to multiple buildings via underground insulated pipes.
- To minimise rising food and pharmaceutical wastage during transport due to higher temperatures, the **report recommended fixing gaps in cold chain distribution networks.**
- India aims to phase out the production and use of ozone-depleting hydrochlorofluorocarbons, used as coolants in air conditioners and refrigerators by 2047.
- **The World Bank report recommended improvements in servicing, maintenance and disposal of equipment that use hydrochlorofluorocarbons (HCFCs),** alongside a shift to alternative options with a lower global warming footprint.
- In India, 45 per cent of the country's peak electricity demand in 2050 is expected to come from space cooling alone.
- **The report estimates that the market potential and investment opportunity in space cooling will be USD 1.5 trillion by 2040** – USD 1.25 trillion for residential buildings and USD 228 billion for commercial buildings.
- It is imperative for the government to create an adequate enabling investment framework that can attract financing from the private sector.



3.8 Kanger Valley National Park

In news- Bird watchers and forest department officials counted 200 types of birds in Chhattisgarh's first-ever inter-state bird survey conducted in the Kanger Valley National Park recently.

Findings of the survey-

- **Nine species of owls** (including the spot-bellied eagle-owl), 10 birds of prey, 11 species of woodpeckers (including white-bellied woodpecker, the largest woodpecker in peninsular India), and many other species were documented during the survey, according to a press statement.
- **The survey was organised by** the Forest department of and birders from Chhattisgarh, in collaboration with non-profits Birds & Wildlife of Chhattisgarh and Bird Count India.

- The survey revealed that the landscape of Kanger Valley can potentially host species found in the Himalayas, the Northeast, the Eastern and Western Ghats.
- For instance, the **Malabar trogon and white-bellied woodpecker are thought to be birds of the Western Ghats**. Many species of flycatchers and warblers from temperate Eurasia visit the region during the winter.
- **Pied wheatear and northern lapwing are new birds for Chhattisgarh**, with the pied wheatear having never before been observed in Central India.
- **All observations have been uploaded to eBird**, an online platform to record bird observations through the eBird Mobile App.

About the Kanger Valley(Ghati) National Park-

- The name of this National Park is derived from the Kangar river, which flows in its length.
- Kanger Valley got the status of a national park in the year 1982.
- Valley National Park is a typical mixed humid deciduous type of forest, in which the Sal, Saugaun, teak and bamboo trees are available in abundance.
- The state bird, Bastar Maina, is a type of Hill maina (*gruncula Dhariosoa*), which is capable of emulating the human voices.
- Apart from wildlife and plants, this National Park is home to three exceptional caves – famous for their amazing geological structures of Kutumbasar, Kailash and Dandak- Stalagmites and Stalactites.
- National Park is known for the presence of underground limestone caves with dripstone and foston.
- In the eastern part of the National Park, the Bhainsadhara is located where one can see the sandy beaches where crocodiles are mostly found.
- Tirathgarh Waterfall is located here.

3.9 New Energy Outlook report-2022

In news- The BloombergNEF has published the New Energy Outlook report-2022 recently.

Key highlights of the report-

- The Bloomberg NEF's Net Zero Scenario describes an economics-led evolution of the energy economy to achieve net-zero emissions in 2050.
- As per the report, **it is still possible to keep the temperature increase to 1.77 degrees Celsius** with determined action.
- But **investments in the clean energy sector must triple that of fossil fuel to reach Net Zero by 2050**.
- It says that **greenhouse gas emissions from developing economies, particularly India**, will continue to rise until the end of the present decade and will only begin to decline by the early 2030s.
- **Emissions in Europe, the United States, Australia and Japan have already peaked in 2022** and will decline rapidly after tha.
- However, **China's drop takes a blended approach**; emissions peak in 2022 and stabilize for a while before they realign with developed countries' trajectories.
- If **no new policies were carried out to transition to a low-carbon economy**, the emissions would fall on average at a rate of 0.9 percent every year and this aligned with **2.6 degrees Celsius temperature warming by 2100**.
- **Switching the sources of power generation from fossil fuels to renewable energy** is the need of the hour and this would account for nearly half of the reductions in carbon emission.
- **About 25 per cent of total emissions can be reduced using low-carbon electricity in the transport sector and industrial processes**.
- The rest of the emissions can be abated by hydrogen and carbon capture and storage (CCS) by 6 per cent and 11 per cent, respectively.
- **The usage of hydrogen grows five-fold in the Net Zero projection for 2050 from 90 million tonnes now to 501 million tonnes in 2050**.
- It is driven by the energy industry (163 million tonnes), steel making (144 million tonnes) and transport (88 million tonnes) sectors for either aviation or shipping.

- The Net Zero scenario requires a global investment of \$194 trillion by 2050 to make this large-scale clean energy transition.

3.10 Intergovernmental Negotiating Committee (INC) on Plastic Pollution

In news- The first session of the INC, tasked with developing an international legally binding instrument to end plastic pollution has recently concluded in Uruguay.

About INC-

- The INC-1 was convened and managed by the United Nations Environment Programme (UNEP).
- The first session of the INC-1 came nine months after representatives from 175 countries endorsed a landmark resolution on plastic pollution at the United Nations Environment Assembly (UNEA).
- The UNEA resolution 5/14 calls for the international legally binding instrument to promote a comprehensive lifecycle approach to chemicals and waste through sustainable production and consumption of plastics by adopting sound product design, and environment-friendly waste management.
- The document proposed four strategic goals that can guide the transition to a circular economy:
- Reduce the size of the problem by eliminating and substituting problematic and unnecessary plastic items, including hazardous additives.
- Ensure that plastic products are designed to be circular — reusable as a first priority, and recyclable or compostable after multiple uses at the end of their useful life.
- Close the loop of plastics in the economy by ensuring that plastic products are reused, recycled, or composted.
- Manage plastics that cannot be reused or recycled (including existing pollution) in an environmentally responsible manner.
- It implicitly endorsed the Centre for Science and Environment (CSE)'s position that plastic pollution is rooted in the material's lifecycle.
- CSE is a not-for-profit public interest research and advocacy organisation based in New Delhi, India.
- CSE had released a report titled The Plastic Life-cycle in November 2022, at the India Habitat Centre, New Delhi.
- The report identified issues in the upstream, midstream, and downstream of (primarily) India's plastic value chain, like the summary document.

Global plastic pollution-

- Global plastic production totalled 460 million tonnes (Mt) in 2019, double of 234 Mt in 2000, according to the Organisation for Economic Co-operation and Development.
- Plastic waste more than doubled during the same period to 353 Mt from 156 Mt.
- In 2000 alone, 22 Mt of plastic material leaked into the environment. By 2019, 109 Mt had accumulated in rivers and 30 Mt in ocean

Plastic pollution in India-

- Most of the plastic used in India today was for packaging and an increasing amount of crude oil was being converted to plastic every year.
- Most of this was single-use plastic and might not be recyclable.
- The EPR legislation, which exists in European Union, North America, Latin America, and OECD countries, has been introduced in India in 2022 for plastic packaging.
- However, the implementation and enforcement of the EPR policy will be a major challenge for the authorities as the policy is weak and has gaps that will need to be plugged, according to CSE.
- Most of India's plastic waste was leaked in the environment or dumped in open dumpsites (67 per cent).
- The country burnt (20 percent) more plastic waste in specialized facilities than it recycled (12 per cent).
- As per Union Environment Ministry, over 34 lakh tonnes of plastic waste was generated in the financial year 2019-2020, an increase of more than 10 lakh tonnes compared to 2017-18.

3.11 Transmission System for Integration of over 500 GW RE Capacity by 2030

In news- The Union Minister for Power and New Renewable Energy launched the plan “Transmission System for Integration of over 500 GW RE Capacity by 2030”.

Key highlights of the plan-

- The Ministry of Power had constituted a high-level committee under Chairperson, Central Electricity Authority for planning the transmission system required for having 500 GW of non-fossil fuel based installed capacity by 2030.
- The Committee prepared a detailed Plan titled “Transmission System for Integration of over 500 GW RE Capacity by 2030” in consultation with States and other stakeholders.
- **The Plan is a major step towards achieving the goal of integrating 500 GW of non-fossil fuel based capacity by 2030** by providing a broad plan of required transmission system for having 537 GW of Renewable Energy capacity by the year 2030.
- The transmission plan also **includes a transmission system required for evacuation of 10 GW off-shore wind located in Gujarat and Tamilnadu.**
- The Plan also **envisages installation of Battery Energy Storage Capacity of the order of 51.5 GW by 2030** to provide Round the Clock power to end-consumers.
- **The Plan has identified major upcoming non-fossil fuel based generation centres in the country, which include** Fatehgarh, Bhadla, Bikaner in Rajasthan, Khavda in Gujarat, Anantapur, Kurnool RE Zones in Andhra Pradesh, offshore wind potentials in Tamil Nadu and Gujarat, RE park in Ladakh etc.
- The planned transmission system project will provide visibility to the Renewable Energy Developers about the potential generation sites and scale of investment opportunity.
- **Further, it will also provide the Transmission Service Providers the vision of growth opportunity** available in the transmission sector along with investment opportunities of about 2.44 lakh crore.
- The installed electricity generating capacity in the country at present is 409 GW comprising **173 GW from non-fossil fuel sources, which is about 42% of the total installed electricity generating capacity.**

3.12 United Nations-Water Summit on Groundwater 2022

In news- The United Nations-Water Summit on Groundwater 2022 was held in Paris, France recently.

About the summit-

- It was organized by UN-Water, UNESCO and the International Groundwater Resources Assessment Centre.
- The **five pillars** of the SDG 6 Global Acceleration Framework released in June 2020 — data and information, capacity development, innovation, finance and governance, were the main themes of the discussions.
- The summit aims to raise awareness on groundwater conservation at the global stage and will mark the completion of the “Groundwater: Making the invisible visible” campaign run by UN-Water throughout 2022.
- The campaign highlighted the role of groundwater in alleviating poverty, food and water insecurity and other socio-economic development hurdles.
- The key takeaways from the summit will be presented at the UN 2023 Water Conference to be held in New York in March 2023.

Note:

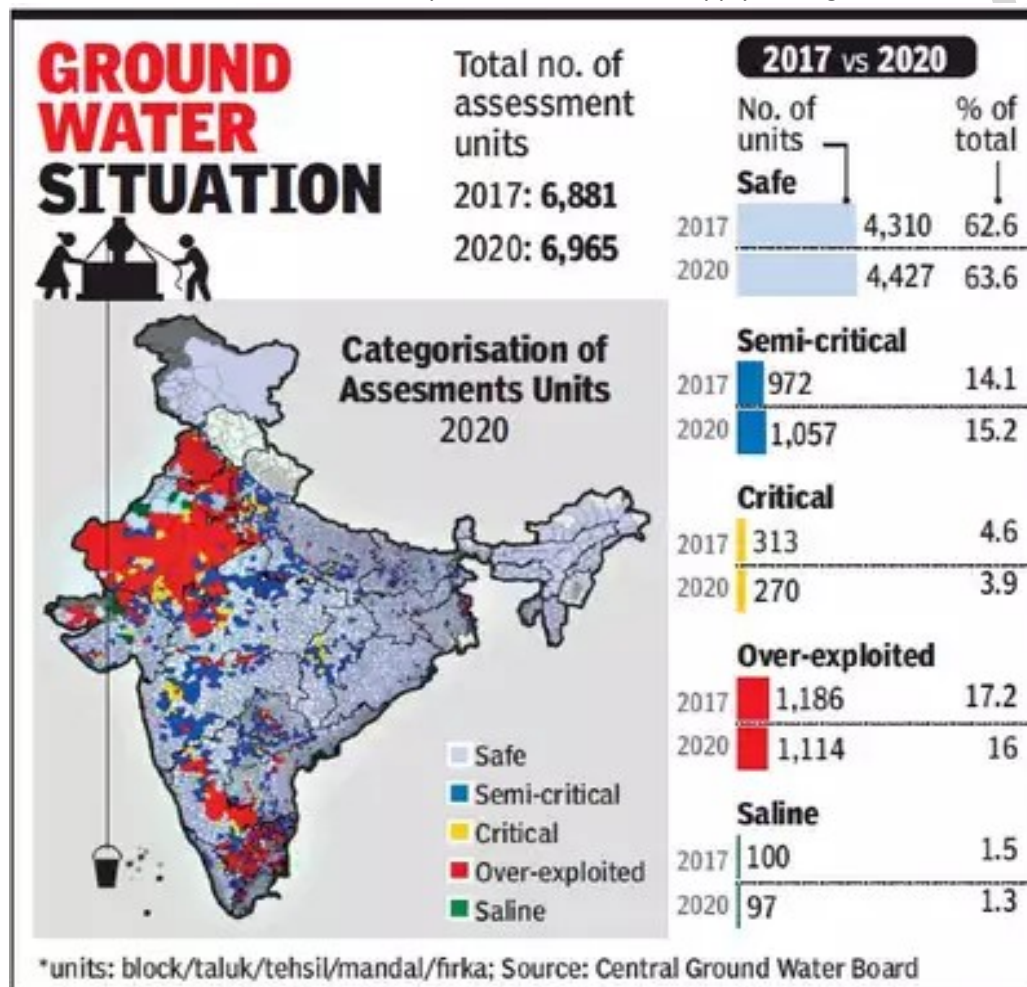
Theme of World Water Day, 2022 (March 22) was “Groundwater: Making the invisible visible to bring attention to the invisible yet impactful resource”.

Ground water-

- Groundwater is the water found underground in the cracks and spaces in soil, sand and rock.
- It is stored in and moves slowly through geologic formations of soil, sand and rocks called aquifers.
- Aquifers are typically made up of gravel, sand, sandstone, or fractured rock, like limestone.

Ground water status in India-

- As per the Central Ground Water Board (CGWB) report, **nearly one-sixth of India's 6,965 groundwater assessment units (block/tehsil/taluka) are 'over-exploited'** and this along with two other categories of concern 'critical' and 'semi-critical' account for 35% of total assessed units.
- The over-exploited areas are mostly concentrated in the north-western part of the country including parts of Punjab, Haryana, Delhi and western Uttar Pradesh where there have been indiscriminate withdrawals of groundwater leading to over-exploitation.
- India is the largest user of groundwater with a fourth of the total global withdrawal.
- Indian cities cater to about 48 per cent of its water supply from groundwater.



3.13 The Wild Life (Protection) Amendment Bill, 2022

In news- Parliament has passed the Wild Life (Protection) Amendment Bill, 2022.

Key features & proposed amendments of the bill-

- It seeks to conserve and protect wildlife through better management of protected areas and rationalise schedules which list out species under the Wildlife (Protection) Act, 1972.

- **It provides for certain permitted activities like grazing or movement of livestock** and bonafide use of drinking and household water by local communities.
- It seeks to **amend Section 43 of the principal Act to permit transfer or transport of a captive elephant** for a religious or any other purpose by a person having a valid certificate of ownership.
- **It inserts a new Schedule for specimens listed in the Appendices under CITES.**
- **Amendment to Section 6 to constitute a Standing Committee** to exercise such powers and duties as may be delegated to it by the State Board for Wildlife.
- **Amendment to Section 43 to permit elephants, a Schedule I animal, to be used for 'religious or any other purpose'.**
- It **inserted Section 49E to empower the Central government to designate a Management Authority** to grant export or import permits for trade of specimens.
- **It also inserts Section 49F to empower Central government to designate a Scientific Authority** to advice on aspects related to impact on the survival of the specimens being traded
- **The Bill seeks to regulate the control of sanctuaries.** It provides that the Chief Wildlife Warden shall act in accordance with the management plans for the sanctuary, to be prepared as per Central guidelines.
- It also **empowers both Central and State governments to declare areas adjacent to national parks and sanctuaries as a conservation reserve**, for protecting flora and fauna, and their habitat.
- The Bill also **empowers the Central government to regulate and stop the import, trade or possession of invasive plant or animal alien species.**
- It further **requires every person possessing live specimens of scheduled animals to obtain a registration certificate from the Management Authority.**
- **It provides that people may "voluntarily surrender" any captive animals to the Chief Wildlife Warden,** and such surrendered animals will become property of the state government.
- The Bill also **enhances the penalties prescribed for violation of provisions of the Act.** For 'General violations', maximum fine is increased from Rs 25,000 to Rs. 1 lakh. In case of specially protected animals, the minimum fine of Rs. 10,000 has been enhanced to Rs. 25,000.

The bill has invited scrutiny on two major issues: the exemption made to allow the transfer of captive elephants, and the sweeping powers given to the Centre to declare species as vermin.

The legal dilemma over the elephant's status-

- The Indian elephant, an endangered wildlife species and a prized domestic animal.
- **In 1897, the Elephants' Preservation Act prohibited the killing or capture of wild elephants** unless in self-defence or to protect property and crops, or under a licence issued by the district collector.
- **In 1927, the Indian Forest Act listed the elephant as 'cattle'**, prescribing the highest fine of Rs 10 for every impounded jumbo, in comparison, a cow attracted a fine of Re 1, and a camel of Rs 2.
- **The Wildlife (Protection) Act (WLPA), 1972, identified the elephant, along with the bullock, camel, donkey, horse, and mule, as a "vehicle".**
- Given the highest legal protection in 1977, the **elephant is the only animal in WLPA's Schedule-I that can still be owned legally** — by means of inheritance or gift.
- **In 2003, Section 3 of the WLPA prohibited trade in all captive wildlife and any (non-commercial) transfer across state boundaries without permission from the concerned chief wildlife warden.**
- **The WLPA (Amendment) Bill 2021 proposed an exception to Section 43:** "This section shall not apply to the transfer or transport of any live elephant by a person having a certificate of ownership, where such person has obtained prior permission from the State Government on fulfillment of such conditions as may be prescribed by the Central Government."
- Along with conservation and animal welfare groups, the Parliamentary Standing Committee headed by Congress leader Jairam Ramesh objected to the blanket exemption, and recommended that it should be limited to temple elephants kept for religious purposes.

The vermin conflict -

- **Since 1972, the WLPA has identified a few species — fruit bats, common crows and rats — as vermin or nuisance animals** that spread diseases or destroy crops and are not protected under the Act.

- **Killing animals outside this list was allowed under two circumstances:**
1. **Under Section 62 of WLPA**, given **sufficient reasons**, any species other than those accorded the highest legal protection (such as tiger and elephant but not wild boar or nilgai) can be **declared vermin at a certain place for a certain time**.
 2. **Under Section 11 of WLPA**, the **chief wildlife warden can allow the killing** of an animal irrespective of its status in the Schedules, **if it becomes “dangerous to human life”**.
 - The state governments took the decisions under Section 62 until **1991 when an amendment handed these powers to the Centre**.
 - The purpose was apparently to restrict the possibility of eliminating a large number of animals at a species level as vermin.
 - Under Section 11, states could issue culling permits only locally and for a few animals.
 - **In recent years, however, the Centre has started using its powers under Section 62 to issue sweeping orders declaring species as vermin** at even state levels, often without any credible scientific assessment. E.g, nilgais were declared as vermin across 20 districts in Bihar for a year in 2015.
 - The Centre cited “large-scale destruction of agriculture” as the ground for declaring monkeys (Rhesus macaque) vermin in Shimla municipality in 2019.

3.14 UN Convention on Biological Diversity to meet in Montreal

In news- Delegates from 196 countries, Parties to the United Nations Convention on Biological Diversity (CBD) met in Montreal, Canada from December 7-21 2022, aimed to improve on **Aichi Biodiversity Targets, which expired in 2020**.

The Aichi Targets-

- The Aichi Targets, **adopted during the 2010 CBD summit in Nagoya, located in Japan’s Aichi prefecture, included goals such as reducing deforestation by at least half during the coming decade** and curbing pollution so that it no longer harmed ecosystems.
- After parties adopted the Aichi Targets, they were expected to devise their own national biodiversity strategies that would mimic the goals laid out by Aichi.
- **Nearly all parties created these strategies, but most were never fully implemented.**

Status of the Aichi Targets-

- The most notable Aichi objective — and one of the few to include a numerical goal, aimed to **protect or conserve 17% of all land and inland waters and 10% of the ocean by the end of the decade**.
- **Today about 15% of the world’s land and 8% of ocean territories are under some form of protection**, though the level of protection varies.
- About **10% of the targets saw no significant progress**.
- Six of the targets, including the land and ocean conservation target, were deemed “partially achieved”.
- **No single country met all 20 Aichi Targets within its own borders**.
- In the end, Aichi was deemed a failure by the United Nations and the CBD secretariat called on parties to come up with another guiding document to direct conservation efforts through 2030 and beyond.

Reasons for failing to meet Aichi Targets-

- A lack of clearly defined metrics by which to gauge progress made the Aichi goals tough to implement.
- Countries largely failed to update others on the progress they were or were not making.
- No robust monitoring, planning, reporting and review framework.
- A lack of financing to help developing countries meet the Aichi goals.
- The Global Environment Facility, the primary source of financing for international biodiversity protection, has collected around \$5 billion from 29 countries for the funding period from 2022 to 2026.

- That is hardly enough to make up the \$711 billion funding gap per year estimated by a 2019 assessment by several conservation institutes.

3.15 Restoration Barometer Report by IUCN

In news- The International Union for Conservation of Nature (IUCN) has released the Restoration Barometer Report recently.

What is the Restoration Barometer?

- Restoration Barometer was launched in 2016 as the **Bonn Challenge Barometer**.
- The Barometer has **eight indicators** that build a comprehensive picture of a country's restoration progress.
- It records the size of the area being brought under restoration as well as the corresponding climate, biodiversity and socio-economic benefits, and covers the enabling policies and funding structures at the heart of successful restoration.

Key highlights of the report-

- The IUCN flagship (a first-of-its-kind report) Restoration Barometer report is based on data submitted by 18 countries to the IUCN Restoration Barometer from 2021 to 2022.
- As per the report, investments of **USD 26 billion across 18 countries have restored 14 million hectares of degraded landscapes**, an area about the size of Greece, created 12 million jobs and over 145 million tonnes of carbon sequestered.
- **India is among four countries**, including Ecuador, Pakistan, and Uzbekistan, which are **still in the process of finalizing the data**.
- The report details how 18 countries are using the Restoration Barometer tool to track progress on their restoration commitments under global agreements, which **total 48 million hectares by 2030**.
- **At present, only the restoration of inland waters, terrestrial habitats and coastlands are covered by the Barometer**.
- Next year, the Barometer will be further extended to include restoration efforts relating to several key marine solutions and habitats including kelp, seagrasses and shallow reefs.
- Endorsed by over 50 Governments, **the Restoration Barometer was developed by IUCN with the support of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection**.
- It is the **only tool that is already being used by Governments to track restoration and its benefits across all terrestrial ecosystems**, including coastal and inland waters, and report on their commitments against global frameworks such as the UN Decade on Ecosystem Restoration, Bonn Challenge, Paris Agreement.
- It will also allow countries to track progress against restoration commitments under the forthcoming post-2020 Global Biodiversity Framework targets leaders will set at COP15.
- **The 18 countries which have submitted their progress report are** Colombia, Costa Rica, El Salvador, Guatemala, Mexico, Peru, Cameroon, Ghana, Kenya, Malawi, Mozambique, Rwanda, Uganda, Bangladesh, Sri Lanka, Europe, Central Asia and the Caucasus: Kazakhstan, Kyrgyzstan and Tajikistan.

3.16 The Arctic Report Card, 2022

In news- NOAA has released the Arctic Report Card 2022 recently.

What is the Arctic Report Card?

Issued annually since 2006 by the National Oceanic and Atmospheric Administration (NOAA), an American scientific and regulatory agency, the Card is a timely and peer-reviewed source for clear, reliable and concise

environmental information on the current state of different components of the Arctic environmental system relative to historical records.

Key highlights

- The average surface air temperature over the Arctic for this past year (October 2021-September 2022) was the 6th warmest since 1900.
- The last seven years are collectively the warmest seven years on record.
- In 2022 Arctic sea ice extent was similar to 2021 and well below the long-term average.
- Satellite records from 2009 to 2018 show increasing maritime ship traffic in the Arctic as sea ice declines.
- The most significant increases in maritime traffic are occurring from the Pacific Ocean through the Bering Strait and Beaufort Sea.
- Low pressure across the Alaska Arctic and northern Canada sustained warm summer temperatures over the Beaufort Sea and Canadian Archipelago.
- August 2022 mean sea surface temperatures continued to show warming trends for 1982-2022 in most ice-free regions of the Arctic Ocean.
- Rising temperatures have helped plants, shrubs and grasses grow in parts of the Arctic tundra, and 2022 saw levels of green vegetation that were the fourth highest since 2000, particularly in the Canadian Arctic Archipelago, northern Quebec and central Siberia.
- The Greenland Ice Sheet experienced its 25th consecutive year of ice loss.
- In September 2022, unprecedented late-season warming created surface melt conditions over 36% of the ice sheet, including at the 10,500 ft ice sheet summit.
- A new chapter in this year's report deals with Arctic precipitation. Measuring snow, rain and freezing rain is tricky there as in the northernmost reaches of the region, there aren't many weather gauges.
- It says that precipitation levels have increased significantly in the Arctic since the mid-20th century.
- 2022 was the region's third-wettest year since 1950.
- Snow accumulation in the Arctic was above average during the 2021-22 winter.

3.17 UN recognises Namami Gange

In news- The United Nations (UN) has recognized Namami Gange initiative to rejuvenate India's sacred River Ganga as one of the top 10 World Restoration Flagships to revive the natural world.

Key updates-

- The Award was received by the Director General, Namami Gange at a function in the 15th Conference of Parties **(COP15) to the Convention on Biodiversity (CBD) in Montreal, Canada** on 14th December 2022, the **World Restoration Day**.
- Namami Gange was selected from over 150 such initiatives from 70 countries across the globe.
- They were **selected under the banner of the United Nations Decade on Ecosystem Restoration**.
- The recognized initiatives, including **Namami Gange, will now be eligible to receive UN support, funding or technical expertise**.

What is the UN Decade on Ecosystem Restoration?

- It is a global movement coordinated by the United Nations Environment Programme (UNEP) and the United Nations Food and Agriculture Organization (FAO).
- The United Nations Decade on Ecosystem Restoration runs from 2021 to 2030.
- It aims to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean.
- It can help to end poverty, combat climate change and prevent a mass extinction.
- Following on from the 2011 - 2020 United Nations Decade on Biodiversity, the decade on Ecosystem Restoration was launched in June 2021.
- The United Nations called for countries to follow through on existing pledges to restore a total area similar to the size of China by 2030.

About Namami Gange-

'Namami Gange Programme', is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government in June 2014 with budget outlay of Rs.20,000 Crore to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of National River Ganga.

Main pillars of the programme are:

- Sewerage Treatment Infrastructure.
- River-Front Development.
- River-Surface Cleaning.
- Bio-Diversity.
- Afforestation.
- Public Awareness.

GANGA AVALOKAN: THE FIRST OF ITS KIND MUSEUM ON GANGA RIVER

Prime Minister Narendra Modi on September 29, 2020, inaugurated the 'Ganga Avalokan Museum' at Haridwar. It is the first of its kind museum. He also released a book "Rowing Down the Ganges". The Prime Minister said that the Museum would be a special attraction for pilgrims and it would further enhance the understanding of the heritage associated with Ganga.

Achievements of Namami Gange Mission

- Sixty-three sewerage management projects under implementation while 12 new sewerage projects launched in Uttarakhand, UP, Bihar, Jharkhand and WB
- Twenty-eight River-Front Development projects and 33 entry-level projects for construction, modernization and renovation of 182 ghats and 118 crematoria initiated
- Surface cleaning for collection of floating solid waste from the ghats and river and its disposal are afoot at 11 locations
- Launched programmes for Biodiversity Conservation and Ganga Rejuvenation, Fish and Fishery Conservation in Ganga River, Ganges River Dolphin – Conservation Education Programme
- Five Biodiversity centres – at Dehradun, Nara, Allahabad, Varanasi and Barrackpore – have been developed for restoration of identified priority species
- Activities such as events, workshops, seminars, conferences and IEC activities were organized to make a strong pitch for public outreach and community participation in the programme
- Forestry interventions for Ganga River under execution as per the project report prepared by Forest Research Institute, Dehradun for a period of five years (2016–21) at a cost of Rs 2,300 Crore. Work commenced in seven districts of Uttarakhand for medicinal plants
- Against the target of 15, 27,105 units, MoDWS has built 8,53,397 toilets
- Consortium of seven IITs is engaged in preparing Ganga River Basin Plan; 13 IITs have adopted 65 villages to develop them as model villages

Note:

- The National Mission for Clean Ganga (NMCG) has previously won the "Public Water Agency of the Year" in the Global Water Awards, 2019 by Global Water Intelligence.
- **The documentary 'Ganga: River from the Skies'** co-produced with National Geographic India, has also received awards under three categories- Best Documentary, Best Current Affairs and Best Natural History or Wildlife Programme- in the Asian Academy Creative Awards, 2022.

3.18 Oran lands

In news- Residents from around 40 villages of Jaisalmer, Rajasthan have walked 225 kilometres to protect community-conserved sacred spaces known as 'orans'.

What are 'orans'?

- The orans are among the last natural habitats of the great Indian bustard.
- The open stretch of land, which receives long hours of sunlight and brisk winds, has become a hub of green energy with windmills and solar photovoltaic dotting it.
- They are listed as 'wastelands' in the revenue records.
- Some of the names of Orans are Degrai, Mokla, Salkha, Kemde.
- These orans are hotspots of biodiversity with trees and flowers like rohida, bordi, kumbhat, and desi babool in large numbers.
- There are different varieties of grasses like *sevan* and *murath* as well, making these grasslands home to more than 250 species of birds and animals, including the great Indian bustard, McQueen bustard, chinkara, Indian desert cat, desert fox, etc.
- The Supreme Court in 2018 had ordered the orans be recorded as 'deemed forests' in the revenue records in the TN Godavarman vs. Union of India case, but not even one oran has been recorded as a deemed forest so far.

3.19 Outcomes of COP15 of Convention on Biological Diversity (CBD)

In news- COP15 of CBD culminated with a global deal to protect the ecosystems that prop up half the world economy, and prevent the further loss of already ravaged plant and animal populations.

Some of the key areas agreed on after two weeks of negotiations-

Conservation, protection and restoration (30×30 target)-

- Delegates committed to protecting 30% of land and 30% of coastal and marine areas by 2030, fulfilling the deal's highest-profile goal, known as 30-by-30.
- Indigenous and traditional territories will also count toward this goal, as many countries and campaigners pushed for during the talks.
- The deal also aspires to restore 30% of degraded lands and waters throughout the decade, up from an earlier aim of 20%.
- And the world will strive to prevent destroying intact landscapes and areas with a lot of species, bringing those losses close to zero by 2030.

Money for nature-

- Signatories aim to ensure \$200 billion per year is channelled to conservation initiatives, from public and private sources.
- Wealthier countries should contribute at least \$20 billion of this every year by 2025, and at least \$30 billion a year by 2030.

Big companies report impacts on biodiversity-

- Companies should analyse and report how their operations affect and are affected by biodiversity issues.
- The parties agreed to large companies and financial institutions being subject to "requirements" to make disclosures regarding their operations, supply chains and portfolios.
- **This reporting is intended to progressively promote biodiversity, reduce the risks posed to business by the natural world,** and encourage sustainable production.

Harmful subsidies-

- Countries committed to **identify subsidies that deplete biodiversity by 2025**, and then eliminate, phase out or reform them.
- They agreed to **slash those incentives by at least \$500 billion a year by 2030**, and increase incentives that are positive for conservation.

Pollution and pesticides-

- One of the deal's more controversial targets sought to **reduce the use of pesticides by up to two-thirds**.
- Overall, the **Kunming-Montreal agreement will focus on reducing the negative impacts of pollution to levels** that are not considered harmful to nature, but the text provides no quantifiable target here.

Monitoring and reporting progress-

- All the agreed aims will be supported by processes to monitor progress in the future, in a bid to prevent this agreement meeting the same fate as similar targets that were agreed in Aichi, Japan, in 2010, and never met.
- **National action plans will be set and reviewed**, following a similar format used for greenhouse gas emissions under U.N.-led efforts to curb climate change.

Global Biodiversity Framework (GBF)-

- The Montreal Conference has delivered a new agreement called the Global Biodiversity Framework (GBF), which contains four goals and 23 targets that need to be achieved by 2030.
- The GBF is being compared to the 2015 Paris Agreement on climate change that is guiding global climate action.

Note:

- In 2010, at COP10 in Nagoya, Japan, countries had agreed to a Strategic Plan for Biodiversity containing 20 targets.
- These used to be called the Aichi targets — Aichi is the region in which Nagoya city is located.
- A recent report showed that none of these targets were achieved at the end of the decade.
- The GBF is to the 2020-30 decade what the Aichi targets were for the previous one.

CBD, CCD & UNFCCC-

- The UN Framework Convention on Climate Change (UNFCCC) and the CBD were both outcomes of the 1992 Rio Earth Summit — as was the third member of the family, the Convention to Combat Desertification (CCD), which deals specifically with the issue of land degradation.
- The CBD came into force in 1993; the other two in the following year.
- The CBD is not just about conservation and restoration of ecosystems but also about sustainable use of natural resources, and equitable sharing of benefits from the use of these resources.
- The CBD has given rise to two 'supplementary' agreements — the Cartagena Protocol of 2003 and the Nagoya Protocol of 2014.
- Both agreements take their names from the places where they were negotiated.
- The Cartagena Protocol on Biosafety seeks to protect biodiversity from genetically modified organisms by ensuring their safe handling, transport and use. Genetically modified crops, for example, can interfere with natural ecosystems in ways that might not yet be fully understood. That is the reason why GM crops are cultivated on segregated farms.
- The Nagoya Protocol on Access and Benefit Sharing deals with the commercial utilisation of biological and genetic resources, for example, by pharma companies. It asks the host countries to provide access to its genetic resources in a legal, fair and non-arbitrary manner and, as mentioned above, offers them a fair and equitable share of benefits arising out of the utilisation of those resources.

3.20 What is purse seine fishing?

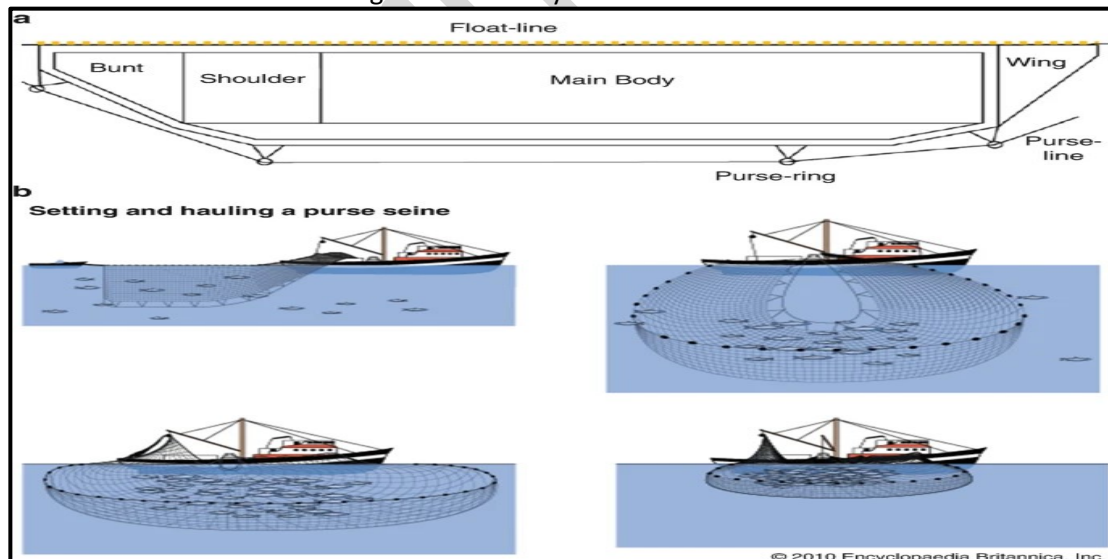
In news-The Union government has told the Supreme Court that a ban imposed by certain coastal States on purse seine fishing, which is known to disadvantage endangered species, is not justified.

Key updates-

- It is prohibited by several States and Union Territories, including Tamil Nadu, Kerala, Puducherry, Odisha, Dadra and Nagar Haveli and Daman and Diu Andaman and Nicobar Islands in their respective territorial waters of up to 12 nautical miles.
- States like Gujarat, Andhra Pradesh, Goa, Karnataka, West Bengal have not imposed any such ban on purse seine fishing. Maharashtra has issued certain orders for regulation of purse seine fishing in its territorial waters
- The Fisheries Department of the Union government has recommended the lifting of the ban on purse seine fishing on a report submitted by an expert committee in November 2022.
- The expert panel has recommended purse seiners to fish in territorial waters and the Indian Exclusive Indian Exclusive Economic Zone (EEZ) subject to certain conditions.
- The committee has also suggested the framing of a “national management plan on purse seine fisheries.

What is purse seine fishing?

- Seine fishing is a **method of fishing that employs a surrounding net, called a seine**, that hangs vertically in the water with its bottom edge held down by weights and its top edge buoyed by floats.
- Seine nets can be deployed from the shore as a beach seine, or from a boat.
- It is used in the open ocean to target dense schools of single-species pelagic (midwater) fish like tuna and mackerel.
- A vertical net ‘curtain’ is used to surround the school of fish, the bottom of which is then drawn together to enclose the fish, rather like tightening the cords of a drawstring purse.
- Purse-seine fishing in open water is generally considered to be an efficient form of fishing. It has no contact with the seabed and can have low levels of bycatch (accidental catch of unwanted species).
- Purse seines can also be used to catch fish congregating around fish aggregating devices. This fishing method can result in higher levels of bycatch.



3.21 Lion @ 47: Vision for Amrutkal

In news-The Ministry of Environment, Forest and Climate Change has prepared the document Lion @ 47: Vision for Amrutkal” to secure and restore lions’ habitats.

About the document-

- Project Lion envisages landscape ecology based conservation of the Asiatic Lion in Gujarat by integrating conservation and eco-development.
- The Project is being implemented in the Gir landscape in Gujarat which is the last home of the Asiatic lion.

Objectives-

- To secure & restore lions' habitats for managing its growing population.
- Scale up livelihood generation and participation of local communities.
- Become a global hub of knowledge on big cat disease diagnostics and treatment.
- Create inclusive biodiversity conservation through project lion initiative.

About Asiatic Lion -

- The **Asiatic lion** is a population of *Panthera leo leo* that today survives in the wild only in India.
- Since the turn of the 20th century, its range has been restricted to Gir National Park and the surrounding areas in the Indian state of Gujarat.
- The lion is a large cat of the genus *Panthera* native to Africa and India.
- The lions were once found throughout Africa, Asia and Europe but their numbers have dwindled over the years in these continents.
- These majestic cats that symbolize courage, ferocity, and power are threatened by extensive habitat loss.
- The lion is an apex and keystone predator that inhabits grasslands, savannas and shrublands.
- The lion is **one of five pantherine cats native to India**, along with the Bengal tiger (*P. tigris tigris*), Indian leopard (*P. pardus fusca*), snow leopard (*P. uncia*) and clouded leopard (*Neofelis nebulosa*).
- It is sexually dimorphic; adult male lions are larger than females and have a prominent mane.
- It is a social species, forming groups called prides. A lion's pride consists of a few adult males, related females, and cubs.
- Between 2008 and 2016, IUCN Red List assessors used only two subspecific names: *P. l. leo* for African lion populations, and *P. l. persica* for the Asiatic lion population.
- **IUCN list:** Asiatic lion (*Panthera leo leo*)- Endangered & *Panthera leo*- Vulnerable.

3.22 Polar bears

In news- According to a Canadian government survey, Polar bears in the country's Western Hudson Bay, an inland sea connected to the Arctic Ocean, are dying at a fast rate.

Key findings-

- According to the researchers, Western Hudson Bay has witnessed a drop of around 50% in the population of polar bears since the 1980s.
- Western Hudson Bay — the region includes Churchill, the town that is known as 'the Polar Bear Capital of the World'.
- It also revealed that females and younger polar bears are the worst affected.
- The Arctic sea ice is crucial to polar bears' survival as they use it not only to hunt seals — their chief food — but also for travelling, mating and resting.
- However, with rising global temperatures, the sea ice is breaking earlier in summer and refreezing later in winter, due to which polar bears get less time to hunt and have to stay hungry for longer and travel greater distances.
- The report also found that the change in the diet leads to a higher mortality rate of bear cubs.

About the polar bear-

- The polar bear is a **hypercarnivorous bear whose native range lies largely within the Arctic Circle**, encompassing the Arctic Ocean, its surrounding seas and surrounding land masses.
- It is the **largest extant bear species, as well as the largest extant land carnivore**.
- They are a powerful symbol of the strength and endurance of the Arctic. The polar bear's Latin name, *Ursus maritimus*, means "**sea bear**." It's an apt name for this majestic species, which spends much of its life in, around, or on the ocean—predominantly on the sea ice.
- In the United States, Alaska is home to two polar bear subpopulations.
- Considered **talented swimmers, polar bears can sustain a pace of six miles per hour** by paddling with their front paws and holding their hind legs flat like a rudder.
- They have a **thick layer of body fat and a water-repellent coat** that insulates them from the cold air and water.
- Polar bears **spend over 50% of their time hunting for food**. A polar bear might catch only one or two out of 10 seals it hunts, depending on the time of year and other variables.
- Their **diet mainly consists of ringed and bearded seals because they need large amounts of fat to survive**.
- Polar bears **rely heavily on sea ice for traveling, hunting, resting, mating** and, in some areas, maternal dens.
- Polar bears are one of the **most significant predators in the Arctic region and they keep biological populations in balance**.
- The big kills made by them serve as a food resource for scavengers like Arctic foxes and Arctic birds.

3.23 New method for freezing and storing coral larvae

In news- Recently, Scientists have frozen Great Barrier Reef coral in a world-first trial.

Key updates-

- Scientists have trialed a new method for freezing and storing coral larvae they say could eventually help rewild reefs threatened by climate change.
- **Cryogenically frozen coral can be stored and later reintroduced** to the wild but the current process requires sophisticated equipment including lasers.
- Scientists say a **new lightweight “cryomesh” can be manufactured cheaply and better preserves coral**.
- In a recent lab trial, the world’s first with Great Barrier Reef coral, **scientists used the cryomesh to freeze coral larvae** at the Australian Institute of Marine Sciences (AIMS).
- **The mesh technology, which will help store coral larvae at -196°C (-320.8°F)**, was devised by a team from the University of Minnesota’s College of Science and Engineering.

What are corals?

- Corals are **marine invertebrates** within the class Anthozoa of the phylum Cnidaria.
- They typically form compact colonies of many identical individual polyps.
- Coral species include the important reef builders that inhabit tropical oceans and secrete calcium carbonate to form a hard skeleton.
- The coral species that build reefs are known as hermatypic, or “hard” corals because they extract calcium carbonate from seawater to create a hard, durable exoskeleton that protects their soft, sac-like bodies.
- Other species of corals that are not involved in reef building are known as “soft” corals.
- These types of corals are flexible organisms often resembling plants and trees and include species such as sea fans and sea whips.
- Each individual coral is referred to as a polyp.

3.24 The glass frog of the Costa Rican rainforest

In news- In a study researchers have reported that when a glass frog falls asleep, almost all of its red blood cells retreat into its liver.

About the glass frog & See through frog-

- Native to forests of Central and South America, glass frogs in the family Centrolenidae get their name from their translucent skin and muscles that blend them seamlessly into their jungle environment.
- Apart from a lime green smear across its back, its skin, muscle and other tissues are see-through.
- As handy as translucence might be for evading predators, it is rare in animals that live on land.

Key findings-

- The researchers reported that when a glass frog falls asleep, almost all of its red blood cells retreat into its liver.
- **They hide in the organ and allow the frog to achieve near invisibility while it rests.**
- The discovery could lead to **clues for how to prevent deadly blood clots.**
- Like people, glass frogs rely on hemoglobin, a colored protein in red blood cells that delivers oxygen around the body.
- In most vertebrates, when blood cells bump into each other, it leads to coagulation.
- **The resulting clot can make a scab to seal a wound** — or, if the clot is in a blood vessel, it can plug up the circulatory system and kill the creature.
- **Glass frogs**, the new research suggests, can control when their blood clots.
- If they are wounded, they will form a scab in the usual way.
- But when they are asleep, with red blood cells packed like sardines in the liver, no clot forms.

3.25 Green Wall/ Bengal Barrier

In news- The West Bengal Pollution Control Board (WBPCB)'s decision to set up a bio-shield, a wall of mega plantations along its western fringe for stopping air pollutants from entering the state, has raised questions.

About the green wall-

- It is expected that the **project will cover around 800 kilometres (km)** across the Purulia, Birbhum, Paschim Bardhaman and Jhargram districts.
- All four districts are part of the Rarh region and lie on Bengal's border with Bihar, Jharkhand and Odisha.
- **The West Bengal Biodiversity Board has been entrusted to execute the project.**
- The Board's rationale is that pollution from other states is responsible for close to half of West Bengal's pollution load.
- Several experts across India have pointed out that WBPCB's 'unique' plan, the execution of which may run into several crores and take years, may not serve its purpose.
- As per the experts, the green wall is not likely to have any direct role in countering the flow of transboundary pollution.
- They further mentioned that transboundary movement of pollution can be curbed only with a regional clean action strategy to cut emissions from a large number of pollution sources spread across the region.
- Green walling with plantations can only filter dust to some extent and that too if it is hugely extensive.
- As per a research, West Bengal receives less transboundary pollution at a proportional scale, compared to many states.

The Great Green Wall or Great Green Wall of the Sahara and the Sahel-

- It is a project led by the African Union, initially conceived as a way to combat desertification in the Sahel region and hold back expansion of the Sahara, by planting a wall of trees stretching across the entire Sahel.
- The modern green wall has since evolved into a program promoting water harvesting techniques, greenery protection and improving indigenous land use techniques, aimed at creating a mosaic of green and productive landscapes across North Africa.
- The project is a response to the combined effect of natural resources degradation and drought in rural areas.
- It seeks to help communities mitigate and adapt to climate change as well as improve food security.

3.26 India's first Nilgiri Tahr project

In news- The **Tamil Nadu** government has recently launched an initiative for the conservation of the Nilgiri Tahr, the **State animal**, at a cost of ₹25.14 crore.

About the project-

- Under the project, the government plans to develop a better understanding of the Nilgiri Tahr population through surveys and radio telemetry studies; reintroduce the Tahrs to their historical habitat; address proximate threats; and increase public awareness of the species.
- The project is to be implemented from 2022 to 2027.
- Furthermore, October 7 will be celebrated as 'Nilgiri Tahr Day' in honour of E.R.C. Davidar, who was responsible for pioneering one of the first studies of the species in 1975.
- The funds for the project are to be provided by the Tamil Nadu Pollution Control Board.
- The project will be headed by a Project Director, who will be assisted by an Assistant Director.

About Nilgiri Tahr-

- Also known as Nilgiri Ibex, the Nilgiri tahr (*nilgiritragus hylocrius*) inhabits **montane grasslands** with rocky cliffs at elevations.
- It is a **sure-footed ungulate** and it is the **only mountain ungulate in southern India amongst the 12 species present in India**.
- **The Adult males of NilgiriTahr species develop a light gray area or "saddle"** on their backs and are hence called "Saddlebacks".
- **It is the sole Caprinae species** found in the tropical mountains of southern India.
- **The animal inhabits meadows with steep cliffs** at elevations between 300 metres and 2,600 metre above sea level.
- **Historically, the Nilgiri Tahr was known to inhabit a large portion of the Western Ghats** but today it remains restricted to a few scattered patches in Tamil Nadu and Kerala.
- **Some of the challenges in the conservation of the Nilgiri Tahrs are** potential local extinction due to highly fragmented populations; invasion of exotic species into the habitat; forest fires; over-exploitation of forest resources; and lack of ecological data and understanding.
- **Locally known as Varaiaadu**, it is protected under Schedule-I of the Wildlife (Protection) Act of India, 1972 and has been listed as "**Endangered**" by IUCN.
- There are multiple **references to it in Tamil Sangam literature** dating back to 2,000 years.
- The late **Mesolithic** (10,000-4,000 BC) paintings highlight the significance of the Tahr in folklore, culture and life.

4. FOREIGN AFFAIRS

4.1 Republic Day Chief Guest-2023

In news- Egypt's President Abdel Fattah al-Sisi will be the chief guest at the Republic Day celebrations in January 2023.

How is the Chief Guest chosen?

- The process commences nearly six months in advance of the event.
- All kinds of considerations are taken into account by the Ministry of External Affairs (MEA) before extending the invitation.
- The most central consideration is the nature of the relationship between India and the country concerned. Invitation to be the Chief Guest of the Republic Day parade is the ultimate sign of friendship between India and the country of the invitee.
- Political, commercial, military and economic interests of India are crucial drivers of the decision, with MEA seeking to use the occasion to strengthen ties with the country of the invitee in all these respects.
- Another factor that has historically played a role in the choice of the Chief Guest is the association with the Non-Aligned Movement (NAM) which began in the late 1950s, early 1960s.
- The first Chief Guest of the parade in 1950 was President Sukarno of Indonesia, one of the five founding members of the NAM alongside Nasser (Egypt), Nkrumah (Ghana), Tito (Yugoslavia) and Nehru (India).
- Al-Sisi's invitation invokes the history of the NAM and the close relationship India and Egypt have shared for 75 years.

What happens after the MEA has zeroed in on its options?

- After due consideration, the MEA seeks approval of the Prime Minister and the President on the matter.
- If the MEA receives clearance to proceed, Indian ambassadors in the concerned country try to discreetly ascertain the availability of the potential Chief Guest.
- This is also a reason why the MEA does not just choose one option but a list of potential candidates.
- After this process is completed and a candidate is finalised, more official communication between India and the country of the invitee follows.
- The Chief of Protocol works on the details of the programme and logistics.

Significance of being the Chief Guest at India's Republic Day-

- It is the highest honour that the country accords to a guest in terms of protocol.
- They are given the ceremonial guard of honour at Rashtrapati Bhavan followed by a reception hosted by the President of India in the evening.
- They also lay a wreath at Rajghat, to honour Mahatma Gandhi.
- There is a banquet in their honour, a lunch hosted by the Prime Minister, and calls by the Vice-President and the External Affairs Minister.

Who is al-Sisi?

- Abdel Fattah al-Sisi was Egypt's military chief and defence minister before he took over control from democratically elected Md Morsi after a coup in 2013.
- He went on to win a subsequent election in 2014 on an economic development plank.
- When he arrives in January next year, al-Sisi will be the **first Egyptian leader to grace the occasion.**

Some of the previous Republic Day Chief Guests

Following are the first five and last five guests who participated in Indian Republic Day:

- 1950: President Sukarno, Indonesia.
- 1951: King Tribhuvan Bir Bikram Shah, Nepal.
- 1952 and 1953: No Chief Guest.
- 1954: King Jigme Dorji Wangchuck, Bhutan.
- 1955: Governor General Malik Ghulam Muhammad, Pakistan.
- 2017: Crown Prince Mohammed bin Zayed Al Nahyan, United Arab Emirates.
- 2018: Ten Chief Guests, Heads of ASEAN States:
- 2019: President Cyril Ramaphosa, South Africa.
- 2020: President Jair Bolsonaro, Brazil.

4.2 India's Presidency of the United Nations Security Council (UNSC)

In news- India has assumed the presidency of UNSC along with G20 recently.

Roles and powers of the UNSC President nation-

- Some of the significant roles of the UNSC broadly include **maintaining international peace in accordance with the principles and purposes of the United Nations**, and to determine the existence of a threat to the peace or act of aggression and to recommend what action should be taken.
- According to the UNSC handbook, the **Council President exercises a vast range of powers such as holding meetings of the Security Council, approving provisional agendas**, signing records of the meetings, besides other crucial decisions.
- **The programme of work (PoW) which in simpler terms, is a calendar of priorities which the President nation would work towards during its tenure is adopted.**

The United Nations Security Council (UNSC)-

- It is **one of the six principal organs of the United Nations**, charged with ensuring international peace and security and approving any changes to the UN Charter.
- **Its powers include** establishing peacekeeping operations, enacting international sanctions, and authorizing military action.
- **All members of the United Nations agree to accept and carry out the decisions of the Council.**
- The UNSC is the **only UN body with the authority to issue binding resolutions on member states.**
- **It held its first session on 17 January 1946 at Church House, Westminster, and London.**
- It has permanent residence at the **UN Headquarters in New York City.**
- The Security Council **consists of fifteen members**, of which five are permanent: China, France, Russia, the United Kingdom, and the United States of America.
- The remaining ten non-permanent members are elected on a regional basis to serve a term of two years.
- The body's presidency rotates monthly among its members, following the English alphabetical order.

How are the non-permanent members elected?

- Each year the General Assembly elects five non-permanent members (out of 10 in total) for a two-year term.
- In accordance with the General Assembly resolution 1991 (XVIII) of 17 December 1963, the 10 non-permanent seats are distributed on a regional basis as follows: five for African and Asian States; one for Eastern European States; two for the Latin American and Caribbean States; and two for Western European and other States.

India has served in the UNSC as a Non-permanent member seven times previously-

- In 1950-51: India, as President of UNSC, presided over the adoption of resolutions calling for cessation of hostilities during the Korean War and for assistance to the Republic of Korea.
- In 1967-68: India co-sponsored Resolution 238 extending the mandate of the UN mission in Cyprus.

- In 1972-73: India pushed strongly for admission of Bangladesh into the UN. The resolution was not adopted because of a veto by a permanent member.
- In 1977-78: India was a strong voice for Africa in the UNSC and spoke against apartheid. Then External Affairs Minister Atal Bihari Vajpayee spoke in UNSC for Namibia's independence in 1978.
- In 1984-85: India was a leading voice in UNSC for resolution of conflicts in the Middle East, especially Palestine and Lebanon.
- In 1991-92: PM P V Narasimha Rao participated in the first ever summit-level meeting of the UNSC and spoke on its role in maintenance of peace and security.
- In 2011-2012: India was a strong vice for developing world, peacekeeping, counter-terrorism and Africa.
- **India had also been in the presidential position in August 2021.**

4.3 Morality Police of Iran

In news- Iran's public prosecutor said that the country's morality police, which is tasked with enforcing the country's Islamic dress code, would be disbanded.

What is Iran's Morality police/ Gasht-e Ershad?

- **The Gasht-e Ershad are part of the police force** and supervised by Supreme Leader Ayatollah Ali Khamenei, but the elected government has a say in their activities through the Interior Ministry.
- **Both men and women officials are part of the morality police.**
- Mahsa Amini, a young woman, was allegedly beaten by the morality police who had detained her for "incorrectly" wearing the mandatory hijab.
- Over the past weeks, the protests have expanded from anger over the hijab regulation to a wider dissatisfaction with state representatives seen to be reinforcing these laws.
- During the reign of Reza Shah Pahlavi in 1936, the hijab was actually banned in an effort to "modernise" the country.
- The police would then remove the hijab from the heads of women seen wearing it in public.
- **A force was constituted to enforce the rules on morality and the public appearance of women only in the 1990s**, after the war broke out with Saddam Hussein's Iraq, and the regime felt the need to centralise its power and underline an Iranian national identity.
- Over the years, the strictness with which the morality rules have been enforced has varied in accordance with the nature of the regime in the country's dual theocratic-democratic political system.
- Not only the **enforcement of hijab, but the implementation of other rules on public appearance and conduct** are also the responsibility of the police.

4.4 Paris Club

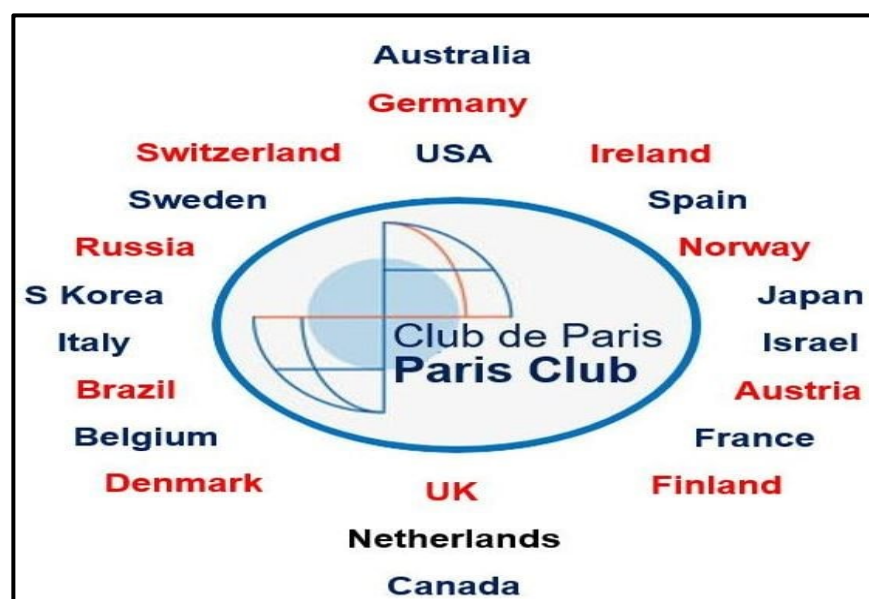
In news- Paris Club creditor nations have proposed a 10-year moratorium on Sri Lankan debt.

Key updates-

- Apart from a 10-year moratorium, it has also proposed another 15 years of debt restructuring as a formula to resolve the Sri Lankan debt crisis.
- The Paris club has also **called upon the Global north and south to take a similar haircut in restructuring of Sri Lankan debt.**
- So far no official proposal has been made by the Paris club to China or India.
- Earlier this year, **Sri Lanka had defaulted on its 51 billion dollar external debt** in the midst of a spiralling political and economic crisis.
- **India has provided emergency aid to the tune of four billion dollars** to the Island nation to tide over its economic crisis in 2022.

What is Paris Club?

- The Paris club is a **group of officials from 22 countries** who find sustainable solutions for challenges faced by debtor countries.
- **Paris Club creditors provide debt treatments to debtor countries in the form of rescheduling**, which is debt **relief by postponement** or, in the case of concessional rescheduling, reduction in debt service obligations during a defined period (flow treatment) or as of a set date (stock treatment).
- It was **created gradually from 1956**, when the first negotiation between **Argentina and its public creditors took place in Paris**.
- It **treats public claims** guaranteed by the public sector to Paris Club members.
- A **similar process occurs for public debt held by private creditors in the London Club, which was organized in 1970 on the model of the Paris Club** as an informal group of commercial banks meeting to renegotiate the debt they hold on sovereign debtors.
- To facilitate Paris Club operations, the **French Treasury provides a small secretariat**, and a senior official of the French Treasury is appointed chairman.
- Since 1956, the Paris Club has signed 433 agreements with 90 countries covering over US\$583 billion.



4.5 International Lusophone Festival

In news- The Ministry of External Affairs (MEA) in partnership with Indian Council of Cultural Relations (ICCR) and the Government of Goa organized the International Lusophone Festival in Goa from 3-6 December 2022.

About the festival-

- **Goa has had historical linkages with the Lusophone world**, which has been nurtured through the presence of **Portuguese cultural institutions** like the Orient Foundation and the Camoes Institute, which promote Portuguese language and culture in India.
- This has deepened our economic, cultural co-operation and people-to-people ties with the Community of Portuguese Language (CPLP) member countries.

Community of Portuguese Language Countries (CPLP)-

- The CPLP also known as the Lusophone Commonwealth (Comunidade Lusofona), is a multilateral forum, founded on 17 July 1996 at the 1st CPLP Heads of State & Government Summit in Lisbon.
- The founding members were Angola, Brazil, Cabo Verde, Guinea Bissau, Mozambique, Portugal and Sao Tome e Principe; while Timor Leste and Equatorial Guinea joined later.

- Lusophone (Portuguese-speaking countries) economies are among the fastest-growing in the world.
- Portuguese is one of the official languages of the continental organizations: African Union, Organization of American States, European Union and of multiple regional organizations, as well as official language of UNESCO General Conference.
- More than 265-million speakers worldwide, the most widely spoken language in the Southern Hemisphere, regarded as the language of the first globalization in the modern era.
- India joined CPLP as an associate observer in July 2021.
- As part of India's engagement with CPLP, the Ministry of External Affairs celebrated the World Portuguese Language Day in Delhi on 5 May 2022, soon after joining CPLP.

4.6 South Korea to change its system for calculating age

In news- South Korea has approved changes in its system for calculating age.

What are the changes?

- **This approval will help standardize the existing system for measuring people's ages**, which is based on a traditional method that sometimes adds up to two years to an individual's biological age.
- The revision is aimed at reducing unnecessary socio-economic costs because legal and social disputes, as well as confusion, persist due to the different ways of calculating age.

Current methods of calculating age?

There are three methods in use at the moment-

- **The first is the one used by the rest of the world, where the age at birth is zero and subsequent birthdays lead to the addition of a year**, and this is used for certain legal and administrative purposes in South Korea as well.
- **The second is the 'Korean age'**, the method most popularly used in society, where a **baby is born and aged one, and turns a year older on January 1, regardless of the date of birth**. Thus, a child born on December 31, 2021, will have turned two years old by January 2, 2022.
- **The third method is the 'year age'**, where a **baby is born zero years old, and turns a year older every January 1**. This method is again used for some legal and official purposes, most notably for compulsory military conscription, to determine when a child can start school, and to determine when a juvenile needs legal protection from abuse.

Reasons for Koreans calculating age differently-

- The current system is seen as a remnant of an ancient culture.
- Some say the traditional ways of determining age take into account the time spent in the womb.
- Others say the unique method came about as ancient counting systems in this part of Asia did not have the concept of zero.
- While similar methods of calculating age existed in China, Japan, Vietnam, etc., gradually, all the countries moved to the international system.
- North Korea adopted the international system in 1985, but with a difference – it follows its own calendar, based on the birth of the national founder and president-for-life Kim Il Sung.

4.7 Global Pandemic Treaty

In news- Member states of the World Health Organization (WHO) announced during the third meeting of the Intergovernmental Negotiating Body (INB) that they will discuss the 'zero draft' of the legally binding pandemic accord in February 2023.

What is pandemic treaty?

- In December 2021, the World Health Assembly agreed to start a global process to draft the pandemic treaty.
- The need for an updated set of rules was felt after the COVID-19 pandemic exposed the shortcomings of global health systems.
- The **Health Assembly adopted a decision titled “The World Together”** at its second special session since it was founded in 1948.
- **Under the decision, the WHO established an intergovernmental negotiating body (INB) to draft and negotiate the contents** of the pandemic treaty in compliance with Article 19 of the WHO Constitution.
- The INB’s work is based on the principles of inclusiveness, transparency, efficiency, Member State leadership and consensus.
- **The pandemic treaty is expected to cover aspects like data sharing and genome sequencing of emerging viruses** and equitable distribution of vaccines and drugs and related research throughout the world.

What is Article 19 of the WHO Constitution?

- Article 19 of the WHO Constitution gives the World Health Assembly the authority to adopt conventions or agreements on matters of health.
- A two-third majority is needed to adopt such conventions or agreements.
- The WHO Framework Convention on Tobacco Control was set up under Article 19 and it came into force in 2005.

4.8 US’s EAGLE Act of 2022

In news- The US white House supported the US Congress pass the (Equal Access to Green Card for Legal Employment) EAGLE Act of 2022.

What is the EAGLE Act of 2022?

- The goal of the Act is to allow US employers to focus on hiring immigrants based on merit, not their birthplace, by eliminating the per country limitation on employment-based immigrant visas (green cards).
- To reduce the impact of this on less-populated countries and ensure that eligible immigrants from these countries are not excluded when the Act is implemented, the legislation plans to phase out the per-country caps over the course of nine years.
- Another goal of the EAGLE Act 2022 is to improve the H-1B specialty occupation visa program. This would be done by bolstering the recruitment requirements, strengthening protections for US workers and boosting transparency, among others.
- It also includes important provisions to allow individuals who have been waiting in the immigrant visa backlog for two years to file their green card applications.
- Once passed, the legislation will allow US employers to focus on recruiting people based on ‘merit’ over ‘birthplace’, and is likely to benefit Indian-Americans.

How will the legislation benefit Indian-Americans?

- According to the CATO report of 2020, in the United States, 75 per cent of the employment-based backlog was made up by skilled Indian workers.
- Apart from the law that imposes limits on the number of green cards for immigrants from any single birthplace, the reason for Indians enduring much longer waits is employers filing far more petitions for Indians than the limits allow.
- However, given the current situation, even if the per-country cap is removed, it would still leave waits of more than a decade for every employer-sponsored immigrant.
- Thus the per-country limits work at a disadvantage for Indians with more recent immigrants facing lifetime waits for green cards.

What is a green card and what are its benefits?

Officially known as a Permanent Resident Card, a green card, issued to immigrants, allows them to live and work in the United States on a permanent basis. The card serves as evidence that the holder has been accorded the privilege of residing permanently.

Some of the benefits of having a green card are –

- It provides a pathway to citizenship; a green card holder can sponsor immediate family members for the same card.
- It provides easy access to US' social security system as also education assistance, travel to and from the country becomes much easier, a card holder can choose to live anywhere in the US, there is more freedom in terms of career opportunities as one can apply for a wide variety of jobs, and a card holder can also have some amount of engagement in the political process of the country.

4.9 New Zealand bans sale of tobacco to certain age group

In news- New Zealand Parliament has recently passed a legislation that will increase the legal age to buy tobacco products each year, with the aim of eventually stamping out smoking altogether.

What does the law say?

- **The Smokefree Environments and Regulated Products (Smoked Tobacco) Amendment Bill bans the sale of tobacco to anyone born after 2008.**
- Those found violating the provision will be fined up to NZ\$150,000 (Rs 79 lakh approximately).
- This bill significantly **limits the number of retailers able to sell smoked tobacco products**; aims to prevent young people from taking up smoking by prohibiting the sale of smoked tobacco products to anyone born on or after 1 January 2009; and **aims to make smoked tobacco products less appealing and addictive.**
- It also brings in other restrictions on tobacco products, such as **limiting the amount of nicotine allowed in cigarettes and other consumables.**
- **The rate of smoking in New Zealand is already very low**, but there are disparities within communities.

Countries with restrictions on Tobacco & Smoking-

- Saudi Arabia banned smoking in government spaces and several public places, including supermarkets, coffee shops and restaurants and prohibits selling tobacco to those under the age of 18.
- In Canada, smoking is banned in almost all enclosed public and indoor workplaces across the country.
- In 2004, Bhutan became the first nation in the world to ban the sale of tobacco and to outlaw smoking in all public places. In June 2010, the country implemented one of the world's strictest anti-tobacco legislations by forbidding the sale or smuggling of tobacco into Bhutan.
- In 2012, Costa Rica passed one of the strictest smoking regulations in the world. Legislation prohibits lighting up in taxis, buses, train, public buildings, bars, casinos and workplaces.
- In 2009, Colombia extended its anti-smoking regulation to include indoor workplaces and public places.
- Uruguay became the first Latin American country to prohibit smoking in public places, including restaurants, bars and the workplace in March 2004.
- Malaysia has banned smoking in several public spaces, including hospitals, airports, public toilets, government premises, Internet cafes and government premises.
- On 12 July 1999, **Kerala** became the first state in India to ban smoking in public places when a Division Bench of the Kerala High Court declared that public smoking as illegal first time in the history of whole world, unconstitutional and violative of Article 21 of the Constitution.
- Smoking in public places is a punishable offense in India, and a fine of Rs. 200 may be imposed for violating the law.
- The Government of India has implemented strict rules against the advertisement of any tobacco product.

4.10 Group of Friends

In news- India has launched a 'Group of Friends' to promote accountability for crimes against peacekeepers during India's current presidency of the U.N. Security Council.

About the group-

- India, Bangladesh, Egypt, France, Morocco and Nepal are co-chairs of the 'Group of Friends'.
- It represents the "political will" of member states, particularly of the troop and police contributing countries, to champion the implementation of the provisions of U.N. Security Council resolution 2589, which was adopted in August 2021 under India's Presidency of the Council.
- Resolution 2589 had called upon member states, hosting or having hosted United Nations peacekeeping operations, to take all appropriate measures to bring to justice perpetrators of the killing of, and all acts of violence against UN personnel, including their detention and abduction.
- The resolution had also called on member states to take all necessary measures to investigate such acts and arrest and prosecute perpetrators of such acts in line with their national law, consistent with applicable international obligations, including under international humanitarian law.
- A concept note on the Group of Friends said that it will seek to facilitate the promotion of accountability for all acts of violence against United Nations peacekeepers; seek facilitation of capacity building and technical assistance to the host state authorities.
- It will actively engage and share information with the Secretary-General and assist the member states hosting or those who have hosted peacekeeping operations, in bringing to justice the perpetrators of such acts.
- The Group of Friends will convene two meetings of its members per year, organise and host one event per year involving Permanent Missions and other stakeholders, designed to inform and galvanise support for promoting accountability for crimes against peacekeepers.
- The Group will convene and be moderated by representatives of the Permanent Missions of Bangladesh, Egypt, France India, Morocco and Nepal as co-chairs and include all interested Member States and United Nations partners.

Note: India, among the largest troop-contributing countries to UN peacekeeping, has lost 177 of its peacekeepers in the line of duty, the largest by far from any troop-contributing country.

4.11 New chairperson for New Delhi International Arbitration Centre (NDIAC)

In news- Former Supreme Court judge Hemant Gupta has been appointed as the chairperson of New Delhi International Arbitration Centre (NDIAC).

About NDIAC-

- The NDIAC is **an autonomous institution based in New Delhi**, to conduct arbitration, mediation, and conciliation proceedings.
- **It was established in 2019** and declared as an **Institute of National Importance** by an Act of Parliament.
- It has been established for the purpose of creating an independent and autonomous regime for institutionalized arbitration.
- It seeks to establish a regime for institutionalized arbitration.
- Along with (Retd.) Justice Gupta, the Appointments Committee of the Cabinet has approved the appointment of Shri Ganesh Chandru and Shri Anant Vijay Palli as part-time members of the NDIAC.
- Term and superannuation: The members of NDIAC will hold office for three years and will be eligible for re-appointment. The retirement age for the Chairperson is 70 years and other members are 67 years.
- **Key functions of the NDIAC will include:** facilitating conduct of arbitration and conciliation in a professional, timely and cost-effective manner; and promoting studies in the field of alternative dispute resolution.

Composition of 9 NDIAC-

NDIAC consists of seven members including:

1. A Chairperson who may be a Judge of the Supreme Court or a High Court, or an eminent person with special knowledge and experience in the conduct or administration of arbitration.
2. Two eminent persons having substantial knowledge and experience in institutional arbitration.
3. Three ex-officio members, including a nominee from the Ministry of Finance and a Chief Executive Officer (responsible for the day-to-day administration of the NDIAC); and
4. A representative from a recognised body of commerce and industry, appointed as a part-time member, on a rotational basis.

4.12 Scotland's new gender recognition Bill

In news- A day after Scotland passed its gender recognition law, the United Kingdom Prime Minister Rishi Sunak confirmed that his government might block the legislation.

What are the provisions of the bill ?

- The law brings sweeping reforms to the system through which people obtain their gender recognition certificate (GRC).
- Currently, they have to apply to a UK gender recognition panel and must present two medical reports, including a psychiatric diagnosis of gender dysphoria and another listing any treatment or surgery they may have had to change their sexual characteristics.
- Applicants should also have been permanently living in their acquired gender for at least two years before applying for the GRC.
- Under the new gender recognition law, applications will be made to the Registrar General for Scotland instead of the UK panel.
- It also removes the need for a medical diagnosis of gender dysphoria and extends the application process to 16 and 17-year-olds for the first time.
- The new self-identification system requires people to have lived in the acquired gender for at least three months before applying and six months for those who are under 18.
- It also provides a three month reflection period to the applicant before a certificate is issued.

Major concerns-

- Opponents of the law claim that the reforms could undermine the rights that women secured after decades of struggle.
- They also fear that abusive males could use the new system to threaten the security of women.
- The **primary criticism of the law is that women's rights can be at odds with trans rights** and that using such laws, abusive men will infiltrate women's spaces. On the surface, there is no evidence to back these claims.
- For instance, in countries where **gender self-identification has been legalised, including Norway, Malta and the Republic of Ireland**, no increase in attacks on women and girls in single-gender spaces has been reported since the law was introduced.

Note: As of November 2022, **gender self-identification, where no judge or medical expert are involved, is part of the law in 18 countries:** Argentina, Belgium, Brazil, Chile, Colombia, Costa Rica, Denmark, Ecuador, Iceland, Ireland, Luxembourg, Malta, New Zealand, Norway, Pakistan, Portugal, Switzerland and Uruguay.

4.13 USA's new tax credit scheme for electric vehicles

In news- Recently, the USA has introduced a new tax credit scheme for electric vehicles.

Key features of the Scheme-

- Starting January 1 2023, a credit of up to \$7,500 will be offered to people who buy certain new electric vehicles as well as some plug-in gas-electric hybrids and hydrogen fuel cell vehicles.
- For people who buy a used vehicle that runs on battery power, a \$4,000 credit will be available.
- The credit, part of changes enacted in the Inflation Reduction Act, is designed to spur EV sales and reduce greenhouse emissions.
- The new law also provides a smaller credit for people who buy a used EV.
- Certain EV brands that were eligible for a separate tax credit that began in 2010 and that will end this year may not be eligible for the new credit.
- Several EV models made by Kia, Hyundai and Audi, for example, won't qualify at all because they are manufactured outside North America.
- The new tax credit, which lasts until 2032, is intended to make zero-emission vehicles affordable to more people.

5. GEOGRAPHY

5.1 Mauna Loa-the world's largest active volcano

In news- For the first time in 38 years, the largest active volcano in the world, Mauna Loa, whose name means "Long Mountain," in Hawaii, has erupted recently.

About Mauna Loa volcano-

- The Big Island of the US state of Hawaii is covered by Mauna Loa, which is situated inside Hawaii Volcanoes National Park.
- Since the beginning of written history in 1843, there have been 34 eruptions.
- There are larger volcanoes, but they are either extinct, which means they are highly unlikely to erupt in the future, or dormant, which means they have not erupted in a very long time.
- Five volcanoes, including Mauna Loa, make up the Big Island of Hawaii, the southernmost island in the Hawaiian archipelago.
- The volcano and Mauna Kea, the world's tallest mountain as measured from its undersea base over 20,000 feet below the ocean's surface, are both located on the Big Island.
- Mauna Loa is the largest and accounts for nearly half of the island's land area and is the largest volcano in the entire globe.
- Shield volcanoes like Mauna Loa are so named because they have long, broad flanks that resemble a warrior's shield.
- Mauna Loa was a dormant volcano for the last 38 years.
- The Volcanic Explosivity Index (VEI) is a scale used to measure the explosivity of a volcano. It has a range of 1 to 8 with a higher VEI indicating more explosivity.

Some famous volcanoes-

Krakatoa, Indonesia

Mount Vesuvius, Italy

Mount Fuji, Japan

Eyjafjallajökull, Iceland- Sometimes referred to as E15, it is one of the many volcanic features of Iceland.

Kīlauea, Hawaii-

- **Adjacent to the Mauna Loa, this is one of the most active volcanoes on the planet.**
- It has been erupting intermittently since recorded history, with its **eruption lasting from 1983 to 2018 being the longest continuous eruption ever recorded.**

- It is a major tourist attraction, with the earliest hotel built at the edge of the volcano in the 1840s.

Mount St Helens, USA-

- Located in Washington State, it **remains the deadliest and most economically destructive volcanic event in U.S. history.**
- It remains an active volcano and one that is considered to be amongst the riskiest by scientists.

Note:

- Any volcano that has erupted within the Holocene period (in the last 11,650 years) is considered to be “active” by scientists.
- “Dormant” volcanoes are those active volcanoes which are not in the process of erupting currently, but have the potential to do so in the future.
- “Extinct” volcanoes are ones which scientists predict will never face any further volcanic activity. Ben Nevis, the tallest mountain in the UK, is an extinct volcano.

5.2 Fujiwhara Effect

In news- As **Super typhoon Hinnamnor (formed near Japan)** and **another tropical storm called Gardo (formed in Philippine Sea)** approached each other, they started a dance around the central line between them, showcasing a textbook example of what is known as the Fujiwhara Effect.

What is the Fujiwhara Effect?

- Fujiwhara Effect is any interaction between tropical storms formed around the same time in the same ocean region with their centres or eyes at a distance of less than 1,400 km, with intensity that could vary between a depression (wind speed under 63 km per hour) and a super typhoon (wind speed over 209 km per hour).
- The interaction could lead to changes in the track and intensity of either or both storm systems.
- In rare cases, the two systems could merge, especially when they are of similar size and intensity, to form a bigger storm.
- There are five different ways in which the Fujiwhara Effect can take place.
- During a merger interaction between two tropical cyclones the wind circulations come together and form a sort of whirlpool of winds in the atmosphere.
- Fujiwhara effect was identified by Sakuhei Fujiwhara, a Japanese meteorologist whose first paper recognising the Fujiwhara cases was published in 1921.
- The first known instance of the effect was in 1964 in the western Pacific Ocean when typhoons Marie and Kathy merged.

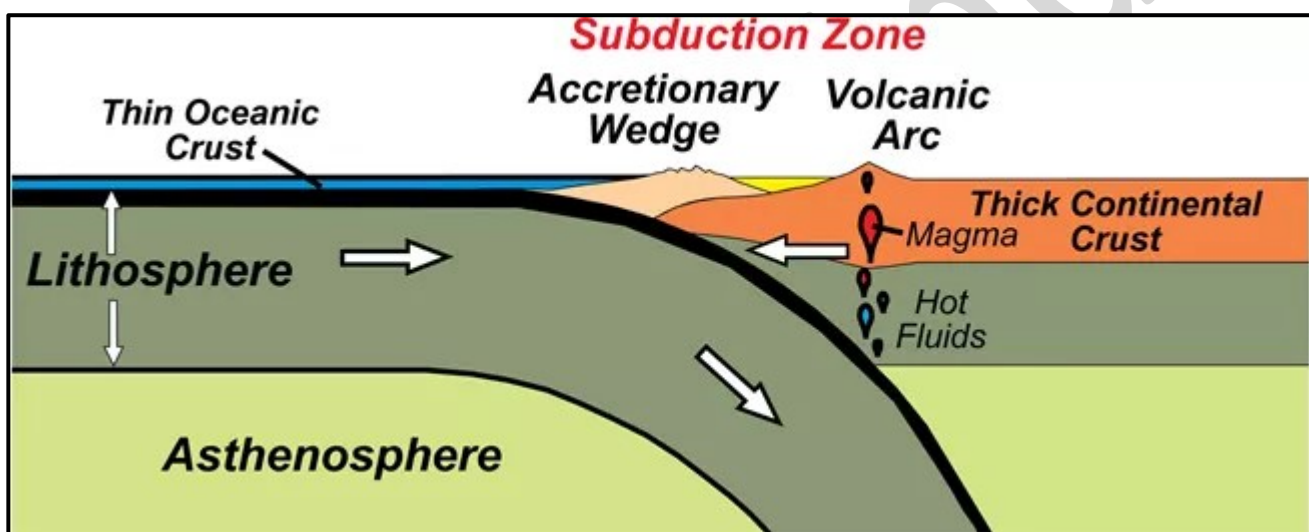
5.3 Origin of Earth's Oxygen

In news- A new study has found interesting information about the origin of earth’s oxygen.

Key findings-

- 21 percent of the atmosphere consists of this life-giving element. But in the deep past, as far back as the Neoproterozoic era 2.8 to 2.5 billion years ago this oxygen was almost absent.
- As per the new study at least some of the Earth’s early oxygen came from a tectonic source via the movement and destruction of the Earth’s crust.
- The Archean eon represents one third of our planet’s history, from 2.5 billion years ago to four billion years ago.

- This alien Earth was a water-world, covered in green oceans, shrouded in a methane haze and completely lacking multicellular life. Another alien aspect of this world was the nature of its tectonic activity.
- On modern Earth, the dominant tectonic activity is called plate tectonics, where oceanic crust — the outermost layer of the Earth under the oceans — sinks into the Earth's mantle (the area between the Earth's crust and its core) at points of convergence called subduction zones.
- However, there is considerable debate over whether plate tectonics operated back in the Archean era.
- One feature of modern subduction zones is their association with oxidised magmas.
- These magmas are formed when oxidised sediments and bottom waters — cold, dense water near the ocean floor are introduced into the Earth's mantle. This produces magmas with high oxygen and water contents.
- This research aimed to test whether the absence of oxidised materials in Archean bottom waters and sediments could prevent the formation of oxidised magmas.
- The identification of such magmas in Neoproterozoic magmatic rocks could provide evidence that subduction and plate tectonics occurred 2.7 billion years ago.
- Researchers collected samples of 2750- to 2670-million-year-old granitoid rocks from across the Abitibi-Wawa subprovince of the Superior Province — the largest preserved Archean continent stretching over 2000 km from Winnipeg, Manitoba to far-eastern Quebec.



5.4 State of Global Water Resources 2021 by WMO

In news- WMO has published its first State of Global Water Resources report in order to assess the effects of climate, environmental and societal change on the Earth's water resources.

Key highlights of the report-

- The report gives an overview of river flow, as well as major floods and droughts.
- The aim of this annual stocktake is to support the monitoring and management of global freshwater resources in an era of growing demand and limited supplies.
- **The report focuses on three major areas:**
 - a. Streamflow, the volume of water flowing through a river channel at any given time.
 - b. Terrestrial water storage (TWS) — all water on the land surface and in the sub-surface.
 - c. The cryosphere (frozen water).
- It **provides insights into hotspots for changes in freshwater storage** and highlights the crucial role and vulnerability of the cryosphere (snow and ice).
- It **shows how large areas of the globe recorded drier than normal conditions in 2021 - a year** in which precipitation patterns were influenced by climate change and a La Niña event.
- **The area with below-average streamflow was approximately two times larger than the above-average area**, in comparison to the 30-year hydrological average.

- **Currently, 3.6 billion people face inadequate access to water at least a month per year** and this is expected to increase to more than 5 billion by 2050.
- **Between 2001 and 2018, UN-Water reported that 74% of all natural disasters were water-related.**
- The recent UN climate change conference, COP27, urged governments to further integrate water into adaptation efforts, **the first-time water has been referenced in a COP outcome document in recognition of its critical importance.**
- **The first edition of the report looks at streamflow** – the volume of water flowing through a river channel at any given time.
- It **also assesses terrestrial water storage - all water on the land surface** and sub-surface and the cryosphere (frozen water).
- The **information and accompanying maps are largely based on modelled data** (to achieve maximum geographical coverage) and remotely sensed **information from NASA's GRACE** (Gravity Recovery and Climate Experiment) mission for terrestrial water storage.
- WMO's Unified Data Policy seeks to accelerate the availability and sharing of hydrological data, including river discharge and transboundary river basins information.

What does the report say about the Indian subcontinent and Asia?

- According to the World Meteorological Organization (WMO), there is more evidence of the worsening impact of global warming on the Indo-Gangetic Plain (IGP) that straddles eastern Pakistan, northern India, southern Nepal and the whole of Bangladesh.
- The Ganga-Brahmaputra and Indus basins that form the Plain, recorded more water flowing in the river channels due to glacial melt even as their total water storage declined in 2021.
- Southern and northern China (the Amur river basin) were characterized by above-average discharge, similar to some basins in northern India.
- In India, headwaters of the Ganges River were characterized by above- to much above-normal discharge.
- Major Indian river basins (the Brahmaputra, Ganges and Indus), as well as other important river basins in Asia (Huang He, also known as Yellow, and Mekong), exhibit a gradual decline in TWS over the period 2002-2021.

5.5 Coastal red sand dunes of Vizag

In news- Scientists have urged Andhra Pradesh government to protect glacial-period coastal red sand dunes of Vizag.

About Coastal Red Sand Dunes-

- They are popularly known as 'Erra Matti Dibbalu'.
- This site spread across an area of about 20 sq km was **declared as a geo-heritage site by the Geological Survey of India (GSI) in 2014** and the Andhra Pradesh government has listed it under the category of **'protected sites' in 2016.**
- According to geologists, the **site is about 18,500 to 20,000 years old** and it can be related to the last glacial period.
- Primarily this site needs to be protected to study the impact of climate change, as Erra Matti Dibbalu have seen both the glacial and the warm periods.
- Such sand deposits are rare and have been **reported only from three places in the tropical regions in south Asia such as Teri Sands in Tamil Nadu, Erra Matti Dibbalu in Visakhapatnam** and one more site in **Sri Lanka.**
- **They do not occur in equatorial regions or temperate regions** due to many scientific reasons.
- The **uniqueness of this site is that the red sediments are a part of the continuation of the evolution of the earth** and represent the late quaternary geologic age.
- They **exhibit badland topography** with different geomorphic landforms and features, including gullies, sand dunes, buried channels, beach ridges, paired terraces, the valley in the valley, wave-cut terrace, knick point and waterfalls.

- These sediments are unfossiliferous and deposited over the khondalite basement. **The dunes consist of light yellow sand dunes at the top followed by a brick red sand unit**, a reddish brown concretion bearing sand unit with yellow sand at the bottom.
- **The top light-yellow sand unit could not attain the red colouration as the sediments were geochemically unaltered.**
- **The earlier studies indicate that the bottom-most yellow sand unit is fluvial while the other overlying three units are aeolian in origin.**
- Scientists say that the **site was home to the pre-historic man as the excavations at several places** in the region revealed stone implements of three distinctive periods and also the pottery of the Neolithic man.

Note:

- A sand dune is any accumulation of sand grains shaped into a mound or ridge by the wind under the influence of gravity.
- Dunes are found wherever loose sand is windblown: in deserts, on beaches, and even on some eroded and abandoned farm fields in semiarid regions.

5.6 Cyclone Mandous

In news- Cyclonic Storm Mandous wreaked havoc across India's southeastern coast recently, bombarding the region with up to extremely heavy downpours and stormy winds.

About the Cyclonic Mandous-

- After cyclone 'Sitrang' which had largely affected Odisha, West Bengal, and North Andhra Pradesh in October, the recent storm Mandous is **named after the United Arab Emirates (UAE) proposal** which means "treasure box" in Arabic.
- The member nations who name such storms are a part of the World Meteorological Organisation and the United Nations Economic and Social Commission for Asia Pacific panel (WMO/ESCAP) on tropical cyclones.
- In April 2020, IMD shared a list containing a total of 169 names including 13 names proposed by each member country, which take turns to name tropical cyclones in a sequential manner.

What are tropical Cyclones?

- A tropical cyclone is an intense circular storm that originates over warm tropical oceans and is characterized by low atmospheric pressure, high winds, and heavy rain.
- In extreme cases winds may exceed 240 km per hour, and gusts may surpass 320 km per hour.
- In the North Atlantic Ocean and the eastern North Pacific, they are called hurricanes.
- In the western North Pacific, the storms are referred to as typhoons.
- In the western South Pacific and the Indian Ocean, they are variously referred to as severe tropical cyclones, tropical cyclones, or simply cyclones.
- Tropical cyclones occur every year during the late summer months: July–September in the Northern Hemisphere and January–March in the Southern Hemisphere.
- **Several factors are required for these thunderstorms to develop further, including-**
- Sea surface temperatures of around 27 °C (81 °F).
- Low vertical wind shear surrounding the system.
- Atmospheric instability, high humidity in the lower to middle levels of the troposphere.
- Enough Coriolis force to develop a low-pressure center.
- A pre-existing low-level focus or disturbance.
- **Characteristic features of tropical cyclones are** the eye, a central region of clear skies, warm temperatures, and low atmospheric pressure; the eyewall, the most dangerous and destructive part where winds are strongest and rainfall is heaviest; and rainbands, secondary cells that spiral into the center of the storm.

5.7 FAO's Global status of black soils report

In news- Food and Agriculture Organization (FAO) has released the Global status of black soils report recently.

Highlights of the report-

- Global status of black soils is the first such report, released on the occasion of World Soil Day, December 5, 2022.
- Black soils, which feed the global population, are under threat, with most losing at least half of their soil organic carbon (SOC) stocks.
- The inherent fertility of the soils make them the food basket for many countries and are considered essential to the global food supply.
- Land-use change, unsustainable management practices and excessive use of agrochemicals are to blame.
- Most of the black soils suffered from moderate to severe erosion processes, as well as nutrient imbalances, acidification and biodiversity loss.
- They have lost 20 to 50 per cent of their original SOC stock, with the carbon being released into the atmosphere mostly as carbon dioxide, exacerbating global warming.
- Preserving natural vegetation on black soils such as grasslands, forests and wetlands and adopting sustainable soil management approaches on cropped black soils were the two main goals highlighted by the report.

What is Soil organic carbon (SOC)?

- Soil organic carbon (the carbon stored in soil organic matter) is a **measurable component of soil organic matter** and enables many soil functions and ecosystem services.
- Organic matter makes up just 2–10% of most soil's mass and has an important role in the physical, chemical and biological function of agricultural soils.
- SOC is crucial to soil health, fertility and ecosystem services, including food production.
- Soils with high carbon content are likely to be more productive and better able to filter and purify water.
- It plays a big role in climate change, presenting both a threat and an opportunity to help meet the targets of the Paris Agreement.
- **Within the framework of the Koronivia Joint Work on Agriculture (KJWA)**, the Food and Agriculture Organization (FAO) and its Global Soil Partnership (GSP) **launched RECSOIL - Recarbonization of Global Soil**, a promising greenhouse gases (GHG) offsetting option to decarbonize the economy.
- RECSOIL is an innovative initiative with the aim to boost soil health through the maintenance and enhancement of soil organic carbon stocks and is composed of various components that will be defined and designed with detail according to each country's situation and in agreement with local authorities.

About Black soil-

- Black soils are mineral soils which have a black surface horizon, enriched with organic carbon that is at least 25 cm deep.
- These soils are characterized by a thick, dark-coloured soil horizon rich in organic matter.
- Black soils are extremely fertile and can produce high agricultural yields thanks to their elevated moisture storage capacity.
- They constitute 5.6 per cent of global soils and contain 8.2 per cent of the world's SOC stocks.
- **Black soils have the potential to provide 10 per cent of the total SOC sequestration globally** if they receive proper attention.
- Globally in 2010, 66 percent of sunflower seeds, 51 percent of small millet, 42 percent of sugar beet, 30 percent of wheat and 26 percent of potatoes were harvested from black soils.
- According to FAO's global Soil Organic Carbon Sequestration Potential map, **Europe and Eurasia have the highest potential at over 65 percent and Latin America and the Caribbean at around 10 percent.**
- Europe and Eurasia accounted for 70 per cent of the soil in the total cropland, while North America, Latin America and the Caribbean and Asia had 10 per cent each.

- **Black soil in India is also known as “Regur Soil” or the “Black Cotton Soil” that covers about 15% of the total land area of the country.**
- It covers most of the Deccan Plateau – parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu.

5.8 Geminids meteor shower

In news- Some of the cities in India witnessed an all-colourful dazzling sky recently as part of the annual Geminid meteor shower.

What are meteor showers?

- Meteors come from leftover comet particles and bits from asteroids.
- When these objects come around the Sun, they leave a dusty trail behind them.
- As they enter the Earth’s atmosphere at high speed, they burn up, creating a spectacular “shower”.
- Every year Earth passes through these debris trails, which allows the bits to collide with our atmosphere where they disintegrate to create fiery and colorful streaks in the sky.

Geminid meteor shower-

- The Geminids are one of the best and most reliable annual meteor showers.
- If their peak coincides with the new moon, and if the weather is clear, the Geminids can produce approximately 100-150 meteors per hour for viewing.
- This year (2022) however, the moon is bright, and so only 30-40 meteors per hour will be visible in the Northern Hemisphere.
- **The Geminids are unique because unlike most meteor showers, they originate not from a comet, but from an asteroid, the 3200 Phaethon.**
- **The 3200 Phaethon was discovered on October 11, 1983.** It is named after the Greek mythology character Phaethon, son of the Sun God Helios.
- **It takes 1.4 years to complete one round of the Sun.** As the 3200 Phaethon moves close to the Sun while orbiting it, the rocks on its surface heat up and break off. **When the Earth passes through the trail of this debris, the Geminids are caused.**
- **That comes from the constellation Gemini, from whose location in the sky the meteor shower appears to originate.**
- The constellation for which a meteor shower is named only serves to aid viewers in determining which shower they are viewing on a given night and the constellation is not the source of the meteors.

5.9 Two new Water worlds detected

In news- According to a new study two exoplanets encircling a star, which is a red dwarf, were found to be "water worlds," where water makes up a significant portion of the planet's mass.

About twin planets-

- As per the new study, the exoplanets, Kepler-138 c and Kepler-138 d are unlike any other discovered outside the Solar System as these two planets are **filled with water**.
- These water worlds **located in a planetary system 218 light-years away in the constellation Lyra** are unique since the liquid makes up a large volume of their composition.
- Astronomers observed these exoplanets with Hubble and the retired Spitzer space telescopes to make the watery discovery.
- **They are also larger-scale versions of Enceladus (Saturn’s moon) and Europa (Jupiter’s moon).**
- These twin planets of the same size and mass are **more massive than Earth but lighter than ice giants Uranus and Neptune.**

- These exoplanets, along with Kepler-138 b, orbit **Kepler-138, a red dwarf star**. The star is smaller and cooler than the Sun, a yellow dwarf star.
- Further, researchers observations showed that **the Kepler- 138 c and d are made up of ingredients lighter than rock** (rocky planets like Earth) **but heavier than hydrogen or helium** (gas-giant planets like Jupiter).
- Further, the density of the twin exoplanets was lower than Earth but comparable to Enceladus and Europa.
- **But unlike Enceladus or Europa, these worlds are not ocean worlds.**
- The temperature in Kepler-138 c's and Kepler-138d's atmospheres is likely above the boiling point of water.
- Further, the **researchers also discovered a fourth planet in the Kepler planetary system: Kepler-138 e.**
- **The new planet takes 38 days to complete an orbit.** It is in the habitable zone, meaning it is located in an orbit that receives just the right amount of heat from its star to allow water to exist in a liquid form.

5.10US-Canada Great Lakes turning acidic

In news- Scientists are building a sensor network to detect the trends in the water chemistry of Lake Huron, one of the five Great Lakes of North America.

Key updates-

- It is known that the increase in atmospheric carbon dioxide has caused the world's oceans to turn more acidic.
- Recently, it has been observed that by 2100, even the Great Lakes — Superior, Michigan, Huron, Erie, and Ontario — might approach acidity at around the same rate as the oceans.
- Researchers hope the data from the Lake Huron project would add to scientific information on the subject.
- In order to conduct the study, two sensors have been attached to a floating weather buoy at Thunder Bay National Marine Sanctuary near Alpena, Michigan, in the US. One of them measures carbon dioxide pressure in the water column and the other the pH.

What are great lakes?

- The Great Lakes, five interconnected bodies of water straddling the US-Canada border that drain into the Gulf of St Lawrence in the North Atlantic through the St Lawrence River, are the largest group of freshwater lakes in the world.
- Together the Great Lakes cover an area of about 94,850 square miles (245,660 square kilometers).
- The Great Lakes are believed to have been born some 20,000 years ago, when the Earth started to warm and water from melting glaciers filled the basins on its surface.
- Today, the Great Lakes contain a fifth of the world's total freshwater and are a crucial source of irrigation and transportation. The Great Lakes also serve as the habitat for more than 3,500 species of plants and animals.
- The US-Canada border passes through Lakes Superior, Huron, Erie, and Ontario; Lake Michigan lies entirely in the US.
- Lakes Michigan and Huron are sometimes considered as a single water body; taken together, they are the world's largest freshwater lake by surface area.
- By itself, Lake Huron is the world's third largest freshwater lake, after Lake Superior and Lake Victoria.
- Lake Superior is the largest and the deepest of the Great Lakes.
- Lake Ontario is the smallest. Lake Erie is the shallowest. Lake Huron has the longest shoreline.
- Major cities in the region include Milwaukee, Wisconsin; Chicago, Illinois; Cleveland, Ohio; Detroit, Michigan; and Toronto, Ontario.

Acidification of water bodies-

- Acidification of oceans or freshwater bodies takes place when excess carbon dioxide in the atmosphere gets rapidly absorbed into them.

- Scientists initially believed this might be a good thing, as it leaves less carbon dioxide in the atmosphere. But in the past decade or so, it has been established that absorption of carbon dioxide leads to a lowering of the pH, which makes the water bodies more acidic.
- According to the National Oceanic and Atmospheric Administration (NOAA) of the US government, oceans have 200 years alone, ocean water has become 30 percent more acidic.

5.11 Joshimath in Uttarakhand is sinking

The subsidence of Joshimath-

- The town is geologically sensitive, situated on an east-west running ridge to the south-west of Vishnuprayag, the confluence of the Dhauliganga and Alaknanda rivers.
- The gneissic rocks in Joshimath are highly weathered with low cohesive value.
- The reasons for this subsidence, experts believe are-
 - Haphazard construction on fragile mountain terrains that have loose rock.
 - The seepage of the water subsurface.
 - An erosion of topsoil, and
 - Local streams change their course because of man-made factors that block their natural flow.
- The subsidence itself is not new either, first flagged in the 1976 state government-appointed Mishra Commission report.
- But its aggravation over the past two years, causing cracks in homes, rendering them unstable and prompting some to flee, calls for urgent action.
- In August 2022, the state government set up a multi-institutional team to conduct a joint geological and geotechnical survey of Joshimath to ascertain the causes of ongoing subsidence and suggest remedial measures.
- In its findings, the committee found that unplanned developmental activities, periodic seismic activities, and absence of the assessment of the carrying capacity of the ground have burdened the fragile mountain slopes on which the town rests.

About Joshimath-

- The town of Joshimath has been a centre of faith, and a spiritual getaway in the mighty Himalayas.
- Located on **National Highway 7**, at a height of 6,150 feet, it is the **doorway to the holy shrines of Badrinath and Hemkund Sahib, and the picturesque Valley of Flowers, and Auli.**
- It is **home to one of the four cardinal pīthas established by Adi Shankara.**
- Between 7th and 11th centuries C.E. Katyuri kings ruled the area to varying extent from their capital at "Katyur" (modern day Baijnath) valley in Kumaon.
- The Katyuri dynasty was founded by Vashudev Katyuri. The ancient Basdeo temple at Joshimath is attributed to Vasu Dev.
- It is home to the Joshimath Cantonment, permanent station of the Garwhal Scouts, close to the Indo-Tibetan Border.
- Chamoli district of Uttarakhand, which houses the township of Joshimath, **falls in zone V of the seismic zonation map of India and is particularly vulnerable to landslides.**

6. GOVERNANCE

6.1 The Manthan platform

In news- The Manthan platform won NSEIT the Best Tech Initiative of the Year at the Dun & Bradstreet Business Excellence Awards 2022.

Dun & Bradstreet Business Excellence Awards 2022:

- Dun & Bradstreet is a global provider of B2B data, insights, and AI-driven platforms for organizations around the world.
- Since 1841, companies of every size have relied on Dun & Bradstreet to help them manage risk and reveal opportunity.
- The award covers 23 categories largely based on business performance parameters.
- The award was presented for building the technology infrastructure to support Manthan.

The Manthan platform-

- It is a platform that promotes collaboration at scale between industry and the scientific research and development ecosystem.
- The development of the platform was conceptualized and implemented by the Office of the Principal Scientific Adviser (PSA) to the Government of India.
- Launched on India's 76th Independence Day, Manthan empowers multiple stakeholders to collaborate for co-creating solutions aligned with the United Nations' Sustainable Development Goals (SDGs) and our national scientific missions.
- Through this platform – Manthan – India aims to present an opportunity to bring national and global communities closer to the nation's technology revolution.

Note:

- NSEIT Limited is a **global technology enterprise focused on delivering excellence in a complex digital environment**, primarily in the banking, insurance, and capital market ecosystem, and a 100% subsidiary of the National Stock Exchange of India.
- Their **key service pillars** are Application Modernization, Business Transformation, Data Analytics, Infrastructure & Cloud Services, Cybersecurity, EdTech, and online examinations solutions.

6.2 GHAR – GO Home and Re-Unite portal

In news- National Commission for Protection of Child Rights (NCPCR), has developed and launched a portal namely GHAR - GO Home and Re-Unite (Portal for Restoration and Repatriation of Child).

Key features of the portal-

- **Digital tracking and monitoring of children** who are in the Juvenile Justice system and have to be repatriated to another Country/State/District.
- **Digital transfer of cases of children to the concerned Juvenile Justice Board/Child Welfare Committee** of the State. It will help in speedy repatriation of children.
- Where there is a requirement of a translator/interpreter/expert, a request will be made to the concerned State Government.
- Child Welfare Committees and District Child Protection Officers can ensure proper restoration and rehabilitation of children by digitally monitoring the progress of the case of the child.
- **A checklist format** will be provided in the forms so that the children who are being hard to repatriate or children who are not getting their entitled compensation or other monetary benefits can be identified.
- **List of Government implemented schemes will be provided**, so that at the time of restoration the Child Welfare Committees can link the child with the schemes to strengthen the family and ensure that child remains with his/her family.

6.3 Operationalising Unified Health Interface (UHI)

In news- The National Health Authority (NHA) has released a consultation paper on 'Operationalising Unified Health Interface (UHI) in India' that outlines the market rules that will govern the UHI Network.

About the consultation paper-

- It focuses on the different elements of UHI and the market rules that will govern them.
- These include guidelines that will govern the way search & discovery will take place in a fair and transparent manner, payment & settlement processes, rules around cancellation & rescheduling, grievance redressal mechanism, and more.
- Each section has specific open questions where feedback from stakeholders is sought.

What is UHI?

- It is a network of open protocols that enable the interoperability in health services.
- UHI aims to enable interoperability in health services in India through open protocols.
- It is powered by protocols built by an open community of developers and deployed on a Gateway built by National Health Authority (NHA).
- UHI is one of the foundational layers in the Ayushman Bharat Digital Mission (ABDM) Stack that focuses on the discoverability and delivery of health services.
- While the current ABDM building blocks enable the interoperable exchange of personal health data and provide registries for doctors, patients and health facilities, UHI leverages these building blocks to provide a seamless end-to-end experience for the users.
- Through UHI enabled applications, patients can discover, book, conduct and pay for services offered by a variety of participating providers from any application of their choice.

6.4 QR code tagging of LPG cylinders

In news- A pilot study for QR code tagging of cylinders has been undertaken by Indian Oil Corporation Ltd. (IOCL) at Madanpur Khadar Bottling Plant, Delhi.

Key updates-

- Petroleum and Explosives Safety Organisation (PESO) has accorded approval for a period of 3 months w.e.f. 01.09.2022 for filling of QR coded LPG cylinders at Madanpur Khadar Bottling plant and dispatch to only two distributors of Delhi Market.
- Subsequently PESO has extended the permission further for 3 more months i.e. till 28.02.2023.
- This initiative has potential to **resolve issues of pilferage, tracking and tracing and better inventory management of gas cylinders.**

About Petroleum and Explosives Safety Organisation-

- The PESO, formerly known as Department of Explosives, since its inception in 1898, has been serving the nation as a nodal agency for regulating safety of hazardous substances such as explosives, compressed gas and petroleum.
- Apart from the normal functions of enforcement of statutory safety regulations to safeguard public safety, life, property and environment, the organization has rendered meritorious voluntary services in examination and disposal of explosives, improvised explosives devices till late eighties of the last century, some of which were of national importance encountered during freedom struggle of the country, terrorist activities in different regions in the country.
- PESO's major work is to administer the responsibilities delegated under the Explosives Act 1884 and Petroleum Act 1934 and the Rules made thereunder related to manufacture, import, export, transport, possession, sale and use of Explosives, Petroleum products and Compressed gases.

6.5 Revamped e-HRMS 2.0 Portal

In news- The Union Minister Dr Jitendra Singh has launched revamped Probity Portal, e-HRMS 2.0 Portal and Mobile Application of iGoTKarmayogi Portal by Karmayogi Bharat (SPV) recently.

About the portal-

- The revamped e-HRMS 2.0 Portal provides various services in a digital mode to the employees such as- Transfers (Rotation/Mutual), Deputation, iGOT Trainings, Vigilance Status, Deputation Opportunities, Service Book and other basic HR Services like Leave, Tour, Reimbursements etc.
- It is the first digital system in Govt. of India to provide end-to-end HR Services.
- Presently, no other Government Service Cadre System in India is as advanced in its reach and applications, as the revamped e-HRMS 2.0. would be with the launch of this system, DoP&T will be moving towards total digitization of HR Services

Mobile Application of iGoTKarmayogi Portal-

- The iGoTKarmayogi platform is envisaged as a democratised, competency driven solution space that all of the government can access to enhance their execution capabilities.
- With this vision, an iGOT-Karmayogi mobile app is being launched.
- The app and the platform will allow all government servants, at multiple levels, to undergo continuous training, depending on their domain areas.
- The app and the platform will provide anytime-anywhere-any-device learning to train about 2 crores users which was hitherto not achievable through traditional measures.

6.6 Good Governance Day -2022

In news- Every year Good Governance Day is observed on 25th December in India.

About Good Governance Day-

- In 2014, the then newly-elected Narendra Modi government announced that December 25 would be celebrated as "Good Governance Day."
- Marking the birth anniversary of former Prime Minister and Bharatiya Janata Party doyen Atal Bihari Vajpayee, the day is meant to foster awareness among citizens about government accountability and administration.
- The day is celebrated to ensure that the country's residents are treated fairly by the government and they receive advantages of various government services.
- A major push, in this regard, was to promote "e-Governance" with the official slogan for the event being "Good Governance through e-Governance."
- In 2019, the government launched the Good Governance Index on this occasion.
- The GGI is a scientifically prepared tool based on various parameters of good governance which assess the level of any state at a given point of time and help in shaping future development.

A brief note on Atal Bihari Vajpayee-

- Atal Bihari Vajpayee was born on December 25, 1924 in Gwalior, present-day Madhya Pradesh.
- A poet-politician, he joined the Rashtriya Swayamsevak Sangh (RSS) in 1939, becoming a pracharak (full-time worker) in 1947.
- Due to his literary prowess, he began working under Sangh Parivar head Deen Dayal Upadhyaya on various publications.
- After Upadhyaya's passing, in 1968, he became the national president of the Jana Sangh, RSS's new political outfit.

- He was the most eloquent speaker that the Hindu right had at that time and soon proved himself to be a capable administrator as well.
- He held his first major national position as the External Affairs Minister in Morarji's post Emergency government in 1975.
- While that government soon fell (in 1977), Vajpayee had earned major plaudits for his tenure, with his UN General Assembly speech in Hindi drawing praise from all quarters.
- In 1980, erstwhile members of the Jana Sangh coalesced to form the BJP with Vajpayee as its leader.
- While the party initially struggled for electoral success, by the 1990s, religious polarisation orchestrated by the party and other Hindu outfits started making electoral inroads for the BJP.
- While he first became Prime Minister in 1996 (for 16 days) it was his 1998-1999 and 1999-2004 terms that left a lasting impact on the nation.
- Vajpayee expertly toed a line between hardline Hindutva and moderate Hindu nationalism while governing efficiently.
- Under his tenure, India formally became a nuclear power despite significant criticism from the West, ably faced war and peace with Pakistan, undertook massive public welfare projects including Sarva Shikshya Abhiyaan and PM Gramin Sadak Yojana, and ushered in a new era of foreign investment and international relations, especially with the US.

6.7 National Mobile Monitoring System (NMMS)

In news- The Union government has announced that digitally capturing the attendance of workers employed under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA) through NMMS has been made universal from January 1, 2023.

About NMMS-

- The Union government, arguing for transparency and accountability in May 2021, had started a pilot project to capture attendance via a mobile application, the National Mobile Monitoring System (NMMS).
- **From May 16, 2022, capturing attendance via the app was made compulsory for all worksites** with 20 or more workers (which is now mandatory for all worksites, regardless of the number of workers engaged).
- **The NMMS App permits taking real time attendance of workers at Mahatma Gandhi NREGS worksites along with geotagged photograph**, which will increase citizen oversight of the programme besides potentially enabling processing payments faster.
- **Area Officer Monitoring App facilitates them to record their findings online** along with time stamped and geo-coordinate tagged photograph for all the schemes of Deptt of Rural Development- Mahatma Gandhi NREGS, PMAYG, PMGSY.

About MGNREGA-

- It is an employment scheme to enhance livelihood security in rural areas by providing at least 100 days of guaranteed demand based wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.
- MGNREGA scheme was launched in February 2006.
- Ministry: Ministry of Rural development.
- Beneficiaries are willing rural population, unskilled manual labourers and seasonally unemployed.
- A 60:40 wage and material ratio has to be maintained.
- No contractors and machinery is allowed.
- The central government bears the 100% wage cost of unskilled manual labour and 75% of the material cost including the wages of skilled and semi-skilled workers.
- If work is not provided within 15 days of applying, applicants are entitled to an unemployment allowance.
- MGNREGA is to be implemented mainly by gram panchayats.
- At least one-third beneficiaries shall be women.
- Social audit has to be done by the gram sabha at least once in every 6 months.

7. HISTORY

7.1 Baguette makes it to UNESCO list

In news- Baguette, the staple French bread was inscribed into the UN's list of intangible cultural heritage (ICH) on November 30.

What is a Baguette?

- The baguette is a long and thin loaf made of flour, water, salt and yeast, and is consumed as a staple in France.
- Some believe that it was invented by August Zang, a baker and an entrepreneur from Vienna in 1839, who introduced the world to the taste of crusty bread with softer insides, using a steam oven.
- It gained its official name in 1920.
- The history of the bread is uncertain, some also believe that Napoleon Bonaparte, the French military leader, ordered thin sticks of bread for consumption by his soldiers as they could be carried from one place to another more conveniently.

What are India's intangible cultural symbols on the UNESCO list?

- In 2022 India nominated Garba, a traditional dance form that originated in the state of Gujarat, for inscription on UNESCO's ICH list.
- The elements which have been on the representative list of intangible cultural heritage from India in the past decade include Kolkata's Durga Puja (2021), Kumbh Mela (2017), Navroz (2016), Yoga (2016), traditional brass and copper craft of utensil-making among coppersmiths of Punjab (2014), Sankirtana, a ritual musical performance of Manipur (2013), and the Buddhist chanting of Ladakh (2012).
- Before 2011, the list included Chhau dance, Kalbelia folk songs and dance of Rajasthan, and Mudi yettu, a dance drama from Kerala (2010), Ramman, a religious festival and theatre performance of Garhwal in the Himalayas (2009), and Kutiyattam or Sanskrit theatre, and Vedic chanting (2008).
- Ramlila, a traditional performance of Ramayana, was also included in 2008.

Who manages nominations to the UNESCO list in India?

- Several autonomous bodies within the Ministry of Culture actively function towards promoting and preserving intangible cultural heritage within the country.
- **Sangeet Natak Akademi is the nodal organisation which looks after this function**, and files nominations of intangible cultural entities from India, for evaluation by the international body.

What is the intangible cultural heritage of UNESCO?

- UNESCO defines "intangible" as "expressions that have been passed from one generation to another, have evolved in response to their environments and contribute to giving us a sense of identity and continuity..."
- Intangible cultural heritage includes "oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe or the knowledge and skills to produce traditional crafts."
- The adoption of the Convention for the Safeguarding of the ICH by the General Conference of UNESCO in 2003 was a crucial step towards preserving intangible heritage from across the globe.
- **UNESCO's list of Intangible Cultural Heritage of Humanity was established in the year 2008.**

What are the criteria for the selection?

There are three criteria for an intangible cultural heritage to be inscribed in the United Nations list.

1. The entity must be recognized by communities, groups and, in some cases, individuals as part of their cultural heritage.

2. It must be transmitted from generation to generation and be constantly recreated by communities and groups in response to their environment, their interaction with nature and their history and
3. Provide them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.

7.2 Ahom King Sukapha

In news- On the occasion of Assam Day, celebrated every year on December 2, tributes poured in for Swargadeo Chaolung Sukapha, the first Ahom king.

Who is Swargadeo Chaolung Sukapha?

- Sukaphaa, also Siu-Ka-Pha, **the first Ahom king in medieval Assam**, was the founder of the Ahom kingdom and the architect of Assam.
- In reverence to his position in Assam's history the **honorific Chaolung is generally associated with his name.**
- The king played an important role in uniting Assam's various ethnic groups by treating them as equals and encouraging intertribal marriage.
- According to Ahom tradition, **Sukaphaa was a descendant of the god Khunlung**, who had come down from the heavens and had ruled Mong-Ri-Mong-Ram.
- Sukaphaa was born to Chao Chang-Nyeu and Nang-Mong Blak-Kham-Sen in the Tai state of Mong Mao (also called Mao-Lung, with the capital at Kieng Sen), close to present-day Ruili in Yunnan, China.
- After his 19 years as crown prince came to an end, Sukaphaa decided to leave Mong Mao in 1215.
- Sukapha came into Assam not as a raiding conqueror but as a head of an agriculture folk in search of land.
- It appears he didn't encroach upon the land of peasants, rather he opened up new areas for settlement, procuring with shrewd diplomacy what he direly needed for the purpose- the service of the local inhabitants.
- Over the next few years, he moved from place to place searching for the right capital, leaving behind his representative at each stage to rule the colonized land.
- Then he went up the Burhidihing river and established a province at Lakhen Telsa.
- Then he came back down the river and established his rule at Tipam.
- Finally in 1253 he **built himself his capital city at Charaideo near present-day Sibsagar town.** The capital of the Ahom kingdom changed many times after this, but Charaideo remained the symbolic center of Ahom rule.
- With the help of local recruits, **he established three large farms for sali rice cultivation, called Barakhowakhat, Engerakhat and Gachikalakhat.**
- **In 1268 Sukaphaa died** and at the time of his death, his kingdom was bounded by the Brahmaputra River in the west, the Disang River in the north, the Dikhow River in the south and the Naga Hills in the east.
- **The Assam Day is also known as "Sukapha Diwas"** in honour of the founder of the Ahom kingdom and celebrated since 1996 December 2.

7.3 Kochi-Muziris Biennale

In news- Fifth edition of Kochi-Muziris Biennale is planned to be held in December.

About Kochi-Muziris Biennale-

- It is an international exhibition of contemporary art held in the city of Kochi in Kerala, India.
- It is the **largest art exhibition in the country and the biggest contemporary art festival in Asia.**
- It is an **initiative of the Kochi Biennale Foundation with support from the Government of Kerala.**
- **An artist-led endeavour, it was founded in 2011 by Kerala-born, Mumbai-based artists Bose Krishnamachari and Riyas Komu** with an aim to "create a platform that will introduce contemporary, global visual art theory and practice to India."

- Indian and international artists exhibit artworks across a variety of mediums including film, installation, painting, sculpture, new media and performance art.
- **It seeks to invoke the historic cosmopolitan legacy of the modern metropolis of Kochi, and its mythical predecessor, the ancient port of Muziris.**
- Theme of 2022 - **"In Our Views Flow Ink and Fire"**.
- First edition of Kochi-Muziris Biennale was held in 2012.

History of Muziris-

- Muziris was an ancient harbour and an urban centre on the Malabar Coast.
- Muziris found mention in the Periplus of the Erythraean Sea, the bardic Tamil poems and a number of classical sources.
- Situated somewhere around the present day Kodungallur, the exact location of Muziris has been a matter of dispute among historians and archaeologists.
- However recent excavations at Pattanam, near North Paravur, has led to some experts suggesting that the city was located there.
- Muziris was a key to the interactions between South India and Persia, the Middle East, North Africa, and the (Greek and Roman) Mediterranean region.
- Pliny the elder, in his 'Natural History', hailed Muziris as "the first emporium of India".

What are art biennales?

- An international large-scale showcase of art that takes place every two years at a particular site, **biennales are usually non-commercial enterprises, unlike art fairs that centre around a curatorial theme.**
- **One of the most prestigious and oldest biennales in the world, the Venice Biennale** was established through a resolution by the city council in 1893 to celebrate national artistic talent.
- In 2009, a global Biennale Foundation was established with an "aim to create a platform for dialogue, networking, and knowledge sharing among contemporary art biennials around the world".
- Though most biennales do not allow for direct purchase of art, an invitation and participation in the global showcase is often viewed as a validation of an artist's work, and an assertion that they are being noticed.

7.4 Unakoti of Tripura

In news- Unakoti, famously known as the 'Angkor Wat of the North-East', is vying for a UNESCO world heritage tag with both the government and ASI.

About Unakoti-

- Dating back to the 7th-9th centuries, **Unakoti is a 'Shaiva' (Saivite) pilgrimage site with marvelous rock carvings**, murals with their primitive beauty and waterfalls.
- **Literally, Unakoti means 'one less one crore' in Hindi and Bengali** and it is believed that these many rock carvings (ninety-nine lakh ninety-nine thousand nine hundred and ninety-nine) are present here.
- In the **local Kokborok language, it is called Subrai Khung** and is the central tourist spot of the Unakoti District in the Kailashahar Subdivision of Tripura.
- According to Hindi mythology, when Lord Shiva was going to Kashi along with one crore gods and goddesses, he made a night halt at this location.
- He asked all his fellow gods and goddesses to wake up before sunrise and proceed to Kashi.
- It is believed that in the morning, except Shiva, none of them could wake up so he set out for Kashi alone, cursing others to become stone images.
- As a result of this curse, ninety-nine lakh ninety-nine thousand nine hundred and ninety-nine stone images and carvings continue to be present at Unakoti.
- **A local tribal myth says that Kallu Kumhar**, a devotee of goddess Parvati who wanted to accompany Shiva-Parvati to Mount Kailash, **was the maker of these idols.**
- **The images found at Unakoti are of two types, namely rock-carved figures and stone images.**

- Among the rock-cut carvings, the central Shiva head and gigantic Ganesha figures deserve special notice.
- The central Shiva head is known as 'Unakotiswara Kal Bhairava' and is about 30 feet high including an embroidered head-dress which itself is 10 feet high.
- On each side of the head-dress of the central Shiva, **there are two full-size female figures – one of Durga standing on a lion, and another female figure on the other.** In addition, three enormous images of Nandi Bull are found half buried in the ground.
- **Every year, a big fair, known as 'Ashokastami Mela',** takes place in the month of April and is visited by thousands of pilgrims.

Why is it called Angkor Wat in the North-East?

The structures of the rock-cut sculptures are gigantic and **have distinct mongoloid features** and display almost the same mystical charm as the spellbinding figures in the Angkor Wat temple of Cambodia.

Angkor Wat temple-

- **It is a temple complex in Cambodia and is the largest religious monument in the world,** on a site measuring 162.6 hectares.
- **Originally constructed as a Hindu temple dedicated to the god Vishnu,** it was **gradually transformed into a Buddhist temple** towards the end of the 12th century; as such, it is also described as a "Hindu-Buddhist" temple.
- The **original name of the temple was Vrah Viṣṇuloka or Parama Viṣṇuloka** meaning "the sacred dwelling of Vishnu".
- Angkor Wat was built at the behest of the **Khmer King Suryavarman II** in the early 12th century in **Yaśodharapura, the capital of the Khmer Empire,** as his state temple and eventual mausoleum.
- Angkor Wat **combines two basic plans of Khmer temple architecture: the temple-mountain and the later galleried temple.**
- It is designed to represent Mount Meru, home of the devas in Hindu mythology.
- At the centre of the temple stands a quincunx of towers.
- Unlike most Angkorian temples, Angkor Wat is oriented to the west.
- The modern name Angkor Wat, alternatively Nokor Wat, means "Temple City" or "City of Temples" in Khmer.

7.5 Pramukh Swami Maharaj

In news- The month-long Pramukh Swami Maharaj Centenary event, to celebrate the spiritual leader of the Bochasanwasi Akshar Purushottam Swaminarayan Sanstha (BAPS), was inaugurated by the Prime Minister recently.

Who was Pramukh Swami?

- Pramukh Swami, **the fifth spiritual successor in line of the Swaminarayan gurus,** was born on December 7, 1921 to a family of farmers in Chansad village of Vadodara.
- He passed away at Sarangpur in Botad district of Gujarat on August 13, 2016, at the age of 95.
- He was the guru and Pramukh, or president, of the **Bochasanwasi Akshar Purushottam Swaminarayan Sanstha (BAPS),** a major branch of the Swaminarayan Sampradaya, a Hindu denomination.
- BAPS regards him as the fifth spiritual successor of Swaminarayan, following Gunatitanand Swami, Bhagatji Maharaj, Shastriji Maharaj, and Yogiji Maharaj.
- He was believed by his followers to be in constant communion with Swaminarayan, and ontologically, the manifestation of Akshar, the eternal abode of Swaminarayan.
- He received initiation as a Hindu Swami in 1940 from Shastriji Maharaj, the founder of BAPS, who later appointed him as President of BAPS in 1950. Yogiji Maharaj declared Pramukh Swami Maharaj to be his spiritual successor and guru of BAPS, a role he commenced in 1971.
- As president of BAPS, he had overseen the growth of BAPS from an organization centered in Gujarat, India, to one spread around the world, maintaining many Hindu mandirs and centers outside of India.

- He **built** more than 1,100 Hindu temples, including the **Swaminarayan Akshardham temples in New Delhi and Gandhinagar, Gujarat.**
- He had also spearheaded the efforts of BAPS Charities, which is the charitable service organization affiliated with BAPS.
- He was succeeded as the guru and president of the BAPS Swaminarayan Sanstha by Mahant Swami Maharaj.

Akshardham temple-

- 'Akshardham' means the **divine abode of God.** It is hailed as an eternal place of devotion, purity and peace.
- Swaminarayan Akshardham at New Delhi is a Mandir – an abode of God, a Hindu house of worship, and a spiritual and cultural campus dedicated to devotion, learning and harmony.
- Timeless Hindu spiritual messages, vibrant devotional traditions and ancient architecture all are echoed in its art and architecture.
- The mandir is a humble **tribute to Bhagwan Swaminarayan (1781- 1830),** the avatars, devas and great sages of Hinduism.
- The traditionally-styled complex was inaugurated on 6 November 2005 with the blessings of HH Pramukh Swami Maharaj and through the devoted efforts of skilled artisans and volunteers.
- The Akshardham mandir has over two hundred murtis, representing many of the spiritual stalwarts over many millennia.

7.6 Grammar problem found in Panini's 'Ashtadhyayi' solved

In news- Recently, a Cambridge scholar Dr Rishi Rajpopat claims to have solved Sanskrit's biggest puzzle—a grammar problem found in the 'Ashtadhyayi', an ancient text written by the scholar Panini.

What exactly was the problem?

- Written more than 2,000 years ago(4th century BC), the 'Ashtadhyayi' is a linguistic text that set the standard for how Sanskrit was meant to be written and spoken.
- It delves deep into the language's phonetics, syntax and grammar, and also offers a 'language machine', where you can feed in the root and suffix of any Sanskrit word, and get grammatically correct words and sentences in return.
- To ensure this 'machine' was accurate, Panini wrote a set of 4,000 rules dictating its logic. But as scholars studied it, they found that two or more of the rules could apply at the same time, causing confusion.
- To resolve this, Panini had provided a 'meta-rule' (a rule governing rules), which had historically been interpreted as:
- 'In the event of a conflict between two rules of equal strength, the rule that comes later in the serial order of the 'Ashtadhyayi' wins'.
- However, following this interpretation did not solve the machine's problem.
- It kept producing exceptions, for which scholars had to keep writing additional rules and this is where Dr Rishi Rajpopat's discovery came through.

The solution-

- **In his thesis titled 'In Panini We Trust', Dr Rajpopat took a simpler approach,** arguing that the meta-rule has been wrongly interpreted throughout history; what Panini actually meant, was that for rules applying to the left and right sides of a word, readers should use the right-hand side rule.
- Using this logic, **Dr Rajpopat found that the 'Ashtadhyayi' could finally become an accurate 'language machine',** producing **grammatically sound words and sentences almost every time.**
- The discovery now makes it possible to construct millions of Sanskrit words using Panini's system—and since his grammar rules were exact and formulaic, they can act as a Sanskrit language algorithm that **can be taught to computers.**

- Katyayana, another ancient scholar, was also familiar with two interpretations of Panini's work. But according to Dr Rajpopat, Katyayana misunderstood the meta-rule, and his wrong interpretation got compounded over centuries.

About Panini-

- Panini probably lived in the 4th century BC, the age of the conquests of Alexander and the founding of the Mauryan Empire, even though he has also been dated to the 6th century BC, the age of The Buddha and Mahavira.
- **He likely lived in Salatura (Gandhara)**, which today would lie in north-west Pakistan, and was probably **associated with the great university at Taksasila**, which also produced Kautilya and Charaka, the ancient Indian masters of statecraft and medicine respectively.
- By the time Panini's great grammar, the '**Ashtadhyayi**' was composed, Sanskrit had virtually reached its classical form — and developed little thereafter, except in its vocabulary.
- Panini's grammar, which built on the work of many earlier grammarians, effectively stabilised the Sanskrit language. The earlier works had recognised the root as the basic element of a word, and had classified some 2,000 monosyllabic roots which, with the addition of prefixes, suffixes and inflexions, were thought to provide all the words of the language.
- **The Ashtadhyayi laid down more than 4,000 grammatical rules**, couched in a sort of shorthand, which employs single letters or syllables for the names of the cases, moods, persons, tenses, etc. in which linguistic phenomena are classified.
- The *Ashtadhyayi* is **an eight-chapter treatise on the phonetics, semantics (meanings), and syntax (arrangement of words) of classical Sanskrit, as laid out by the grammarian and scholar Daksiputra Panini.**
- It treats the language as formulaic and rule-bound, in a sense and offers differences between how Sanskrit is spoken, versus how it ought to be used in sacred texts.
- **Apart from its contribution as a 'language machine'** (not a literal one, but a conceptual model), the *Ashtadhyayi* has also been used to glean cultural, religious and geographic information about ancient India.
- Since the discovery and publication of his work by European scholars in the nineteenth century, Pāṇini has been considered the "first descriptive linguist" and even labeled as "the father of linguistics".
- **Later Indian grammars such as the Mahabhasya of Patanjali (2nd century BC) and the Kashika Vritti of Jayaditya and Vamana (7th century AD), were mostly commentaries on Panini.**

7.7 India adds three new sites to UNESCO Tentative List

In news- The Archaeological Survey of India said that three new cultural sites in India, including the iconic Sun Temple at Modhera, the historic Vadnagar town in Gujarat and the rock-cut relief sculptures of Unakoti in Tripura, have been added to the tentative list of Unesco world heritage sites.

More information on the three sites-

Sun Temple at Modhera-

- Modhera Sun Temple is located at Modhera village of Mehsana district, Gujarat, India.
- Modhera finds a mention in the ancient scriptures like Skanda Purana and Brahma Purana.
- The old texts also refer to Modhera and its surrounding areas as Dharmaranya or the forest of righteousness.
- It is situated on the bank of the river Pushpavati.
- It was built after 1026-27 CE during the reign of Bhima I of the Chalukya dynasty.
- The place was later known as Sita ni Chauri and Ramkund locally.
- No worship is offered now and the temple is the Monument of National Importance and is maintained by the Archeological Survey of India.
- The temple is built on 23.6° latitude (approximately near the Tropic of Cancer).

- Earlier, during 1024–1025, Mahmud of Ghazni had invaded Bhima's kingdom, and a force of around 20,000 soldiers had unsuccessfully tried to check his advance at Modhera.
- Historian A. K. Majumdar theorizes that the Sun Temple might have been built to commemorate this defense.
- On a block in western wall of cella, there is an inscription "Vikram Samvat 1083" upside down carelessly incised in Devnagari script which corresponds to 1026-1027 CE.

Vadnagar town in Gujarat-

- Vadnagar municipality is a multi-layered historic town, whose history stretches back to nearly 8th Century BCE.
- Its ancient name was Anartapura, and was also known as Anandapura. It was a Buddhist location visited by Xuanzang in 640 C.E.
- The epic tale Mahabharata mentions the Anarta Kingdom in the northern part of present-day Gujarat. The oldest Puranic legend about Gujarat is about a king named Anartha.
- The town is mentioned in the Tirtha Mahatmya section of Nagara Khanda of Skanda Purana by the name of Chamatkarapura.
- The Junagadh rock inscription (dating from 150 C.E.) of Western Kshatrapa King Rudradaman I mentions a region called "Anartha" (meaningless) in northern present-day Gujarat.
- Vadnagar is also the birthplace of the current Prime Minister of India Narendra Modi.

Unakoti in Tripura-

- Dating back to the 7th-9th centuries, Unakoti is a 'Shaiva' (Saivite) pilgrimage site with marvellous rock carvings, murals with their primitive beauty and waterfalls.
- Literally, Unakoti means 'one less one crore' in Hindi and Bengali and it is believed that these many rock carvings (ninety-nine lakh ninety-nine thousand nine hundred and ninety-nine) are present here.
- In the local Kokborok language, it is called Subrai Khung and is the central tourist spot of the Unakoti District in the Kailashahar Subdivision of Tripura.

Note:

- With this, India now has 52 sites on the Unesco tentative list that capture the diverse cultural and natural wealth of India. In 2021 India had moved a proposal to add six sites to the list.
- These included the Satpura Tiger Reserve, iconic riverfront of the historic city of Varanasi, Megalithic site of Hire Benkal, Maratha Military Architecture in Maharashtra, Bhedaghat-Lameta Ghat in Narmada Valley-Jabalpur, and temples of Kanchipuram.
- A Tentative List is an inventory of those properties which each State Party intends to consider for nomination.

7.8 Dokra metal craft

In news- Bengal village Lalbazar is becoming a centre for dokra, a metal craft.

What is Dokra metal craft?

- Dokra (also spelt Dhokra) is non-ferrous metal casting using the lost-wax casting technique.
- This sort of metal casting has been used in India for over 4,000 years and is still used.
- One of the earliest known lost wax artifacts is the dancing girl of Mohenjo-daro.
- The lost wax technique for casting of copper based alloys has also been found in China, Egypt, Malaysia, Nigeria, Central America, and other places.
- Dhokra Damar tribes are the main traditional metalsmiths of West Bengal and Odisha. Their technique of lost wax casting is named after their tribe, hence Dhokra metal casting.

- The tribe extends from Jharkhand to West Bengal and Odisha. A few hundred years ago, the Dhokras of Central and Eastern India travelled south as far as Kerala and north as far as Rajasthan and hence are now found all over India.
- Dhokra, or Dokra, a craft from Dwariapur, West Bengal, is popular.
- Recently Adilabad Dokra from Telangana got Geographical Indication tag in 2018.

Process of lost wax casting-

- There are two main processes of lost wax casting: solid casting and hollow casting.
- While the former is predominant in the south of India the latter is more common in Central and Eastern India.
- Solid casting does not use a clay core but instead a solid piece of wax to create the mould; hollow casting is the more traditional method and uses the clay core.

7.9 Poet Iqbal

In news- Recitation of the prayer 'Lab Pe Aati Hai Dua' written by Muhammad Iqbal has triggered a controversy in UP's Bareilly district.

About poet iqbal-

- Sir Muhammad Iqbal Kt, was a South Asian Muslim writer (Urdu and Persian), philosopher, Scholar and politician whose vision of a cultural and political ideal for the Muslims of British-ruled India was to animate the impulse for Pakistan.
- Iqbal was born in Sialkot, Punjab (now in Pakistan) and died in Lahore when he was aged 60 years.
- Iqbal's tomb is located in Hazuri Bagh in Lahore.
- **Iqbal is commonly referred to as Allama, which is a title given to Islamic scholars.**
- **In 1922, he was knighted by King George V, giving him the title of "Sir".**
- He is best known for his poetic works, including *Asrar-e-Khudi* – after whose publication he was awarded a knighthood, *Rumuz-e-Bekhudi*, and the *Bang-e-Dara*.
- In Iran, where he is known as Iqbal of Lahore, he is highly regarded for his Persian works.
- The prayer, Lab Pe Aati Hai Dua, written by Iqbal in 1902, has been sung at several educational institutions in India and Pakistan, including some prestigious schools which sing it in their morning assembly.
- Among Iqbal's many writings, the **most celebrated is the immortal 'Saare jahan se achcha Hindustan hamara', written in 1904**, became one of the songs that inspired the freedom fighters against British rule.
- **Iqbal's first published collection of poems came out in 1923**, and was titled '**Bang-e-Dara**' (Call of the Marching Bell).
- In his later life, Iqbal came to favour the idea of a separate nation for Muslims, and is believed to have been the influence behind Muhammad Ali Jinnah's vision of a separate nation of Pakistan.
- **In that country, Iqbal is regarded as the ideological founder of the nation** — the man who envisioned the state that Jinnah gave physical shape to.

7.10 Losar- the Tibetan New Year

In news- The Prime Minister of India has extended his greetings and best wishes on the occasion of Losar.

About Losar-

- Losar, also known as Tibetan New Year, is a festival in Tibetan Buddhism.
- The holiday is a new year's festival, celebrated on the first day of the lunisolar Tibetan calendar, which corresponds to a date in February or March in the Gregorian calendar.
- In 2020, the new year commenced on the 24th of February and celebrations ran until the 26th of the same month. It also commenced the Year of the Male Iron Rat.

- The variation of the festival in Nepal is called Lhochhar and is observed about eight weeks earlier than the Tibetan Losar.
- Losar predates the arrival of Buddhism in Tibet and has its roots in a winter incense-burning custom of the Bon religion.
- Losar is celebrated for 15 days, with the main celebrations on the first three days.
- On the first day of Losar, a beverage called changkol is made from chhaang (a Tibetan-Nepali cousin of beer).
- The second day of Losar is known as King's Losar (gyalpo losar). Losar is traditionally preceded by the five-day practice of Vajrakilaya.
- Because the Uyghurs adopted the Chinese calendar, and the Mongols and Tibetans adopted the Uyghur calendar, Losar occurs near or on the same day as the Chinese New Year and the Mongolian New Year, but the traditions of Losar are unique to Tibet, and predate both Indian and Chinese influences.
- As well as that, the Sherpas are associated with Losar and enjoy Losar in the high altitudes of the Nepal Himalayan Range.

7.11 Ratnagiri's prehistoric rock art

In news- Experts and conservationists have raised concerns over the proposed location for a mega oil refinery in Barsu village of Maharashtra's Ratnagiri district. They claim that the refinery might damage prehistoric geoglyphs found in the area.

Significance of Ratnagiri's prehistoric rock art-

- The sites are protected by the state archaeology department and the Archaeological Survey of India (ASI).
- In April, these sites in the Konkan region were **added to a tentative list of UNESCO's world heritage sites.**
- While the **UNESCO listing dates these sites to be over 12,000 years old**, some experts have claimed that these sites might go as far back as 20,000 years, and that this can be ascertained through carbon and geological dating.
- **Clusters of geoglyphs are spread across the Konkan coastline in Maharashtra and Goa, spanning around 900 km. Porous laterite rock**, which lends itself to such carving, is found on a large scale across the entire region.
- **Ratnagiri district has more than 1,500 pieces of such art, also called "Katal shilpa,"** spread across 70 sites and **UNESCO's tentative world heritage list mentions seven sites with petroglyphs in Ratnagiri district.**
- Ratnagiri's rock art is evidence of the continued existence of human settlements from the Mesolithic (middle stone age) to the early historic era.
- The geoglyphs also show the existence of certain types of fauna that are no longer present in the region today.
- Ratnagiri's prehistoric sites are among three Indian attractions that may soon become World Heritage Sites. The other two include Jingkieng Jri, the living root bridge in Meghalaya, and Sri Veerabhadra Temple in Andhra Pradesh's Lepakshi.

What does the imagery in these sites tell us?

- Imagery from these sites shows how people adapted to ephemeral wetlands in a dry-arid plateau having shallow rock pools, streams and watercourses.
- They are examples of advanced artistic skills, showing the evolution of techniques of etching and scooping in rock art.
- The figures depicted in the geoglyphs include humans and animals such as deer, elephant, tiger, monkey, wild boar, rhinoceros, hippopotamus, cattle, pig, rabbit, and monkey.
- Moreover, they also include a high number of reptilian and amphibian creatures such as tortoises and alligators, aquatic animals such as sharks and stingrays, and birds like peacocks.
- The largest rock engraving or geoglyph in India is at Kasheli in the Ratnagiri district, which has a large figure of an elephant with dimensions of 18X13 metres.

What are geoglyphs?

- Geoglyphs are a form of prehistoric rock art, created on the surface of laterite plateaus (Sada in Marathi).
- They are made by removing a part of the rock surface through an incision, picking, carving or abrading.
- They can be in the form of rock paintings, etchings, cup marks and ring marks.
- The UNESCO listing mentions “Konkan geoglyphs.”
- However, elsewhere, the term petroglyph (literally, “rock symbol/character”) is also used.
- As per the UNESCO listing, petroglyphs and geoglyphs share similarities as both require the skills of removing parts or engraving a symbol on the rock surface.

7.12 Veer Bal Diwas

In news- In January 2022, the Centre announced that December 26 would be observed as ‘Veer Bal Diwas’ to mark the martyrdom of Guru Gobind Singh’s younger sons, Sahibzada Zorawar Singh (9) and Sahibzada Fateh Singh (7).

History of the day-

- The two Sahibzade were killed in 1704, in events sparked by the attack on Anandpur Sahib by the armies of the Mughals and the hill kings of present-day Himachal Pradesh.
- Guru Gobind Singh’s mother Mata Gujari Ji, and two other sons, Sahibzaada Ajit Singh Ji (18) and Sahibzaada Jujhar Singh Ji (14), were also martyred within a week.
- Shaheedi Jor Mela or Shaheedi Sabha is observed at Fatehgarh Sahib, which is attended by lakhs of people.
- Guru Gobind Singh was raising an army, which the neighbouring hill kings were not comfortable with.
- In 1699, Guru Gobind Singh had established the Khalsa, which the hill kings and the Mughal empire saw as a threat.
- The kings had had several battles with the Sikhs in the last decade of the 17th century, but had been unable to dislodge them from Anandpur Sahib.
- The fateful attack of 1704 was led by Bilaspur King Bheem Chand and Handuria King Raja Hari Chand. They cordoned off Anandpur Sahib with support from the Mughal empire.
- The armies of Sarhand, Lahore, Jalandhar, Malerkotla and Saharnpur also joined the attack. Supplies to Anandpur Sahib were cut off for several months.
- It is said that the Hindu kings and Muslim Mughal governors finally reached an agreement with the Sikhs, and swore there would be no war if Guru Gobind Singh left Anandpur Sahib.
- According to the history published by the Shiromani Gurdwara Parbandhak Committee (SGPC), Guru Gobind Singh left Anandpur Sahib on December 20, 1704.
- However, their opponents violated their oath and the Guru and his followers were attacked near the river Sarsa, at a distance of about 25 kilometres from Anandpur Sahib.
- Today, Gurdwara Parivaar Vichhora Sahib stands on the spot where the battle of Sarsa took place and the family was separated.
- Guru Gobind Singh and his band of followers were soon surrounded in a castle at Chamkaur Sahib, where they had taken refuge.
- The historic battle of Chamkaur was fought here, where a small number of Sikhs took on the huge army of the Mughals and the hill kings.
- Sahibzada Ajit Singh and Sahibzada Jujhar Singh both sacrificed their lives in this battle on December 22.
- Sahibzada Zorwar Singh and Sahibzada Fateh Singh along with their grandmother were staying in village Kheri at the house of one Gangu, who had served as a cook for the family.
- However, Gangu, tempted by the gold ornaments and coins Mata Gujari ji was carrying and the reward announced by the Mughal governor, handed over the children and their grandmother to Sarhind’s Nawab Wazir Khan.
- The three – the 81-year-old Mata Gujari ji, and the two Sahibzade aged 7 and 9 – were imprisoned in the Thanda Burj (cold tower), which had a river flowing next to it and was thus bitterly cold.
- The Sahibzade refused to convert or to bow to Wazir Khan.
- It was decided that the boys would be bricked alive.

- Two executioners slit their throats, killing the younger, Sahibzada Fateh Singh, first and the same day, Mata Gujari ji died of shock.
- A few years later, Baba Banda Singh Bhadur avenged the execution of the Sahibzade, by attacking and capturing Sarhand.
- Hence, every December, Sikhs mark the supreme sacrifice made by the children and mother of the 10th Guru, Gobind Singh ji.

7.13 National Archives of India (NAI)

In news- Director-General of NAI has said that NAI does not have records of 1962, 1965, and 1971 wars, or even of the Green Revolution. In this context let us look at the NAI, its role and significance.

About NAI-

- The NAI, which functions under the Ministry of Culture, is the repository of all non-current government records, holding them for the use of administrators and scholars.
- Originally established as the Imperial Record Department in 1891 in Calcutta, the capital of British India, the NAI is now located in Delhi.
- It keeps and conserves records of the government and its organizations only, and does not receive classified documents.
- Officials claim the holdings in NAI are in a regular series starting from the year 1748, and the languages of the records include English, Arabic, Hindi, Persian, Sanskrit and Urdu.
- Lately, NAI has also made efforts to make available all the records digitally — on the newly created Abhilekh Patal portal.
- As per the Public Records Act, 1993, various central ministries and departments are supposed to transfer records more than 25 years old to the NAI, unless they pertain to classified information.
- However, it is up to the respective ministries and departments to ascertain what is classified information, and that is where subjective opinions may kick in.
- Various ministries and administrations come up with their own definitions of what is classified and what is non-current.
- Several Union ministries and departments have not shared their records with NAI.
- The NAI also holds regular exhibitions such as the display of declassified files on Subhas Chandra Bose in 2016 and the recent exhibition, 'The Jammu and Kashmir Saga', commemorating 70 years of Jammu & Kashmir's accession to India.

7.14 Dhanu Yatra festival

In news- The 'Dhanu Yatra' festival, the largest open-air theatre festival began recently after a gap of two years, in Bargarh in Odisha.

About the festival-

- Dhanu Yatra, the eleven day long annual extravaganza is an open-air theatre festival stretching more than 5 square km and comprising a village and a town in between.
- Every villager has a role to play and for the entire eleven days, the people oblige what King Kansa orders and not to the District Administration.
- Around 3,000 artistes of 130 cultural troupes from across the country participated in the festival. However, Kansa is the central attraction of the Dhanu Yatra.
- It was started after the harvesting season of the year 1947-48, just after independence of India as a reflection of the joyous atmosphere in the society for the end of British misrule.
- Since then it is performed every year at the end of the harvesting of paddy, the major crop of the locality.
- It starts from the 5th day of 'Pousasukla' to end on 'Pousapurnima'.

- During the 11 days the entire area of Bargarh town and the adjacent sub-urban parts of Bargarh Block render into the kingdom of KANSA – ‘The Mathura Nagari’.
- The rule of Kansa, his death and the exploits of Lord Krishna are enacted in 14 places across the area during the open-air festival.
- The river Jeera flowing by the side of Bargarh transcribed as river Jamuna and ‘Ambapali’ at the other side of the river becomes ‘Gopapura’ as per the mythological nomenclature.

Note:

- Kamsa was the tyrant ruler of the Vrishni kingdom, with its capital at Mathura.
- He is variously described in Hindu literature as either a human or an asura; The Puranas describe him as an asura, while the Harivamśa describes him as an asura reborn in the body of a man.
- His royal house was called Bhoja; thus, another of his names was Bhojapati.
- He was the cousin of Devaki, the mother of the deity Krishna.
- Krishna ultimately fulfilled a prophecy by slaying Kamsa.

7.15 Ahilyabai Holkar

In news- Maharashtra Education Minister has recently proposed to rename the Western Maharashtra city of Ahmednagar as ‘Punyashlok Ahilyadevi Nagar’, after the 18th century Malwa queen, Ahilyabai Holkar.

A brief note on Ahilyabai Holkar-

- Ahilya Bai Holkar was the hereditary noble queen of the Maratha Empire, in early-modern India.
- She established Maheshwar (in Madhya Pradesh) as the seat of the Holkar Dynasty.
- When she was eight years old, Malhar Rao Holkar, the army commander to Peshwa Bajirao, is believed to have spotted her at a temple service in Chondi.
- Impressed by her devotion and character, he decided to get his son, Khande Rao, married to her.
- Ahilyabai took control of Malwa after her husband’s death in the Battle of Kumbher against the king of Bharatpur in 1754.
- She excelled at administrative and military strategies under the guidance of her father-in-law, who believed she should lead her people, and not die by Sati after Khande Rao passed away.
- After the death of her father-in-law and son a few years later, she petitioned the Peshwa to become the ruler, backed by the support of her army.
- Nehru described Holkar’s rule, which lasted for thirty years (1765-1795), as “almost legendary as a period during which perfect order and good government prevailed and the people prospered. She was a very able ruler and organizer, highly respected during her lifetime.”
- It is believed that during her reign, Malwa was never once attacked, when at that time the whole of Central India was facing a power struggle, with battles being fought for the throne.
- Under Holkar, the city of Maheshwar became a literary, musical, artistic and industrial centre, and she helped establish a textile industry there, which is now home to the famous Maheshwari saris.
- In 1780, she had the Kashi Vishwanath temple in Varanasi rebuilt, nearly a century after Mughal king Aurangzeb ordered its destruction.
- Apart from holy sites like Badrinath, Dwarka, Omkareshwari, Gaya, and Rameswaram, Holkar also supported the construction of resting lodges for travellers, and of public ghats.
- Ahilyabai died on 13 August 1795 at the age of 70.
- Ahilyabai was succeeded by her commander-in-chief and nephew, Tukoji Rao Holkar, who soon abdicated the throne in favour of his son Kashi Rao Holkar in 1797.

How did the city of Ahmednagar first get its name?

- It has been a part of some prominent kingdoms, starting from 240B.C., when the vicinity is mentioned in the reference to the Mauryan Emperor Ashok.

- **The Rashtrakuta Dynasty, the Western Chalukyas, and then the Delhi Sultanate ruled over the region in the Medieval period.**
- In the last case, the rule was not direct, and a revolt by Afghan soldier Alladin Hasan Gangu led to the establishment of the Bahmani kingdom in the Deccan.
- After some time, **Ahmednagar (then known as Nizamshahi) became one of the five independent kingdoms to emerge from that empire.**
- **In 1486, Malik Ahmad Nizam Shah** became the Bahmani Sultanate's Prime Minister and defeated the army of the Bahmani kingdom near Ahmednagar in May 1490.
- Finally, in 1494 he laid the foundation of a city close to where he defeated the army, on **the left bank of Sina river, and named it after himself: Ahmednagar.**
- **Nizam Shah also later captured the fort of Daulatabad** and stationed his army there.

8. LAW AND POLICY

8.1 Exit polls

In news- Amidst Gujarat Assembly Election, the Exit Poll once again came to light.

What is the Exit Poll?

- An exit poll asks voters which political party they are supporting after they have cast their votes in an election. In this, it differs from an opinion poll, which is held before the elections.
- An exit poll is supposed to give an indication of which way the winds are blowing in an election, along with the issues, personalities, and loyalties that have influenced voters.
- An exit poll is conducted immediately after people have voted, and assesses the support for political parties and their candidates.
- Today, exit polls in India are conducted by a number of organizations, often in tie-ups with media organizations. The surveys can be conducted face to face or online.
- In 1957, during the second Lok Sabha elections, the Indian Institute of Public Opinion had conducted such a poll.
- However, an opinion poll is a pre-election survey to gather voters' views on a range of election-related issues.
- The EC held its first consultation with political parties on exit and opinion polls on December 22, 1997 — when Dr M S Gill was Chief Election Commissioner.

Rules governing exit polls in India-

- The issue of when exit polls should be allowed to be published has gone to the Supreme Court thrice in various forms.
- **Currently, exit polls can't be telecast from before voting begins till the last phase concludes.**
- In India, results of exit polls for a particular election are not allowed to be published till the last vote has been cast.

8.2 Print and Digital Media Association (PADMA)

In news- The Government of India has approved the Print and Digital Media Association (PADMA) as a self-regulatory body **for publishers of news and current affairs across the country.**

What is the the Print and Digital Media Association?

- The organisation with **47 digital news publishers on board** will look at grievances related to digital media news content on their platforms.

- The organisation will be **headed by former HC Judge Mool Chand Garg and have part-time member Prasar Bharati Ashok Kumar Tandon** and journalist Manoj Kumar Mishra as members.
- It shall perform functions laid down in the sub rules (4) and (5) of rule 12 for the purpose of redressing grievances related to the code of ethics under the rules.
- The body shall also **ensure that the member publishers have agreed to adhere to the provisions of the rules**, including furnishing the requisite information under rule 18.
- Rule 12 of the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, states that self-regulatory bodies will
 - Oversee and ensure adherence by the publisher to the code of ethics; provide guidance to publishers on aspects of the code of ethics.
 - Address grievances which have not been resolved by publishers within 15 days.
 - Hear appeals filed by the complainant against the decision of publishers.
 - Issue such guidance or advisories to such publishers for ensuring compliance to the code of ethics.
- With this, the Ministry has approved nine self-regulatory bodies since May 2021 under rule 12 of the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.
- They include DIGIPUB News India Foundation, Confederation of Online Media (India), and NBF-Professional News Broadcasting Standards Authority, among others.

8.3 ODOP initiative merged with 'Districts as Export Hub (DEH)' initiative

In news- One District One Product (ODOP) initiative is operationally merged with the DEH initiative of Directorate General of Foreign Trade, the Department of Commerce, with the Department for Promotion of Industry and Internal Trade (DPIIT) as a major stakeholder.

What is ODOP initiative?

- **The Central Government has initiated One District One Product (ODOP) in all States/UTs of the country**, as a transformational step towards realizing the true potential of a district, fueling economic growth, generating employment and rural entrepreneurship, taking us to the goal of Aatmanirbhar Bharat.
- The ODOP Initiative is **aimed at fostering balanced regional development across all districts of the country**, enabling holistic socio-economic growth across all regions.
- The objective is to focus on the District of the country as a unit for converting into a manufacturing and export hub by identifying products with export potential in the District.

Some of the achievements of ODOP-

- The ODOP **GeM Bazaar was launched on the Government e-Marketplace (GeM)** in August 2022 with over 200 product categories created on the platform to promote sales and procurement of ODOP products across the country.
- **ODOP products are showcased in various International forums such as World Economic Forum, DAVOS** in May 2022, at International Yoga day (IYD) in New York, US in June 2022 etc.
- The ODOP initiative has been identified for the prestigious Prime Minister's Award for Excellence in Public Administration in Holistic Development through One District One Product (ODOP) category in April, 2022.
- Under DEH, the State Export Promotion Committee (SEPC) and District Export Promotion Committee (DEPC) has been constituted in all the 36 States/UTs.

What is DEH initiative?

- Under the DEH initiative, a District Export Promotion Committee (DEPC) is formed which is responsible for preparing a district export action plan.
- Under this, Districts Export Action Plans include specific actions required to support local exporters / manufacturers in producing / manufacturing identified products in adequate quantity and with the requisite quality, for reaching potential buyers outside India, thereby creating economic value.

- The Districts as Export Hub (DEH) and the One District One Product (ODOP) initiatives aim to link local producers in rural and remote districts with global supply chains, and bring them into the economic mainstream.

8.4 What are postal ballots?

In news- When the votes for an election are being counted, you must have often heard that the postal ballots are counted first.

About Postal Ballots-

- While a majority of votes are generally logged on specially designed electronic voting machines (EVMs), some votes are also logged in the form of postal ballots (PBs).
- According to the Election Commission's rules, **PBs are the first to be counted, with EVMs following a minimum of half an hour after the counting of PBs begins.**

Who can vote using PBs?

- Through this facility, a voter can cast her vote remotely by recording her preference on an official ballot paper and sending it back to the election officer before counting.
- Members of the armed forces like the Army, Navy and Air Force, members of the armed police force of a state (serving outside the state), government employees posted outside India and their spouses are entitled to vote only by post. In other words, they can't vote in person.
- Voters under preventive detention can also vote only by post.
- Special voters such as the President of India, Vice President, Governors, Union Cabinet ministers, Speaker of the House and government officers on poll duty have the option to vote by post. But they have to apply through a prescribed form to avail this facility.
- There is also a facility for absentee voters to vote through PBs. These voters are those who are unable to physically cast their vote due to their service conditions. For instance, railway employees who are posted outside their home state are counted as absentee voters.
- In 2020, the Election Commission (EC) introduced the facility of PBs for senior citizens, people with disabilities (PwD) and those under Covid-19 quarantine.

How are voters supposed to vote using postal ballots?

- **The Returning Officer (RO) is supposed to print ballot papers within 24 hours of the last date of nomination withdrawal** and dispatch them within a day, to ensure that voters have enough time to receive the ballots, cast their vote and return the ballots to the RO on time.
- **The voters are supposed to mark their preference such that** "the intention of the voter to vote for a particular candidate is clear beyond any reasonable doubt."
- **Unclear or improper marking can lead to the PB getting rejected.**
- Alongside the ballot, the envelope containing the PB **also contains a declaration by the voter in Form 13-A** which must be appropriately filled for the vote to count with attestation from an official that marks the eligibility of the voter to avail this facility.

How are postal ballots counted?

- According to EC rules, **All PBs received by the RO up to the hour fixed for commencement of counting must be counted.** Thus even if one's PB arrives at the office of the RO on the morning of counting, it can still be counted as long as it reaches before the commencement of counting itself.
- **Each counting table receives not more than 500 ballots in each round** with up to four tables dedicated for calculating just PBs.
- Persons involved in postal ballot counting are specifically trained about all aspects of postal ballot voting.
- Each table also has one **counting agent representing each candidate.**

- **In the process of counting, first the declaration of each voter is checked for any issues.**
- The total number of postal votes received by each candidate so counted will be entered in the result sheet in **Form 20** and announced for the information of the candidates/election agents/counting agents.
- **Candidates are to know exactly how many PBs were received and how many PBs voted for them.**
- All PBs that are rejected at the counting tables are reverified personally by the RO before being set aside. If the RO finds any of these rejected PBs fit to be counted, they are then counted as valid.

A PB paper will be rejected on the following grounds:

- If no vote is recorded thereon;
- If votes are given on it in favor of more than one candidate;
- If it is a spurious ballot paper;
- If it has been so damaged or mutilated that its identity as genuine ballot paper cannot be established;
- If it is not returned in the appropriate cover/envelope that was sent to the voter by the RO
- If the mark indicating the vote is made in such a way that it is doubtful to make out the candidate to whom the vote has been given; or
- If it bears any mark or writing by which the voter can be identified.

What happens at the end of counting?

- According to EC rules, in case the victory margin is less than total number of postal ballots received then there should be a mandatory re-verification of all postal ballots.
- In the presence of Observer and the RO all the postal ballots rejected as invalid as well as the postal votes counted in favour of each and every candidate shall once again be verified and tallied.
- The Observer and the RO shall record the findings of re-verification and satisfy themselves before finalising the result.
- The entire proceeding should be video-graphed without compromising the secrecy of the ballot and the video-cassette/CD should be sealed in a separate envelope for future reference.

8.5 Sustainable Alternative Towards Affordable Transportation (SATAT) scheme

In news- SATAT initiative envisages setting up of 5000 Compressed Biogas (CBG) plants for production of 15 Million Metric Ton (MMT) per annum of CBG by 2023-24.

About SATAT scheme-

- It is an initiative **aimed at setting up of Compressed Biogas production plants** and making them available in the market for use in automotive fuels by inviting Expression of Interest from potential entrepreneurs.
- The **initiative was launched in October 2018 by the Ministry of Petroleum & Natural Gas** in association with Public Sector Undertaking (PSU) Oil Marketing Companies (OMC) viz.
- Indian Oil Corporation Ltd.
- Bharat Petroleum Corporation Ltd. and
- Hindustan Petroleum Corporation Ltd.
- **Compressed Biogas (CBG) plants are proposed to be set up mainly through independent entrepreneurs.**
- CBG produced at these plants will be transported through cascades of cylinders to the fuel station networks of OMCs for marketing as a green transport fuel alternative.
- The 1,500-strong CNG stations network in the country currently serves about 32 lakh gas-based vehicles.
- The entrepreneurs would be able to separately market the other by-products from these plants, including bio-manure, carbon-dioxide, etc., to enhance returns on investment.
- **It is planned to roll out 5,000 Compressed Bio-Gas plants across India in a phased manner, with 250 plants by the year 2020, 1,000 plants by 2022 and 5,000 plants by 2025.**
- These plants are expected to produce about 40% of current CNG consumption of 44 million tonnes per annum in the country.

What is Compressed Bio-Gas?

- Bio-gas is produced naturally through a process of anaerobic decomposition from waste / bio-mass sources like agriculture residue, cattle dung, sugarcane press mud, municipal solid waste, sewage treatment plant waste, etc.
- The Bio-Gas is purified to remove hydrogen sulphide (H₂S), carbon dioxide (CO₂), water vapour and compressed as Compressed Biogas (CBG), which has **methane (CH₄) content of more than 90%**.
- CBG is exactly similar to the commercially available natural gas in its composition and energy potential.
- CBG has **calorific value and other properties similar to CNG** and hence can be utilized as green renewable automotive fuel.

8.6 Uttarakhand to give 30 percent quota to women in state government services

In news- The Uttarakhand Assembly has recently passed a Bill to provide 30 per cent horizontal reservation to local women in state government services.

About the bill-

- The bill is titled as Uttarakhand Public Services (Horizontal Reservation for Women) Bill, 2022.
- It **provides women with 30 per cent horizontal reservation** in public services and posts, in addition to the existing quotas applicable in the state.
- **The beneficiaries need to be women with a domicile certificate of Uttarakhand.**
- The reservation will be **applicable for posts in local authorities, Uttarakhand co-operative committees** in which the **holding of the state government is not less than 51 percent of share capital, board or corporation or legal body established by any central or Uttarakhand State Act, and any educational institution under the ownership and control of the state government or which receives grants in aid from the state government.**
- If enough women are not available to fill the reserved seats, they will be filled with qualified male candidates in the order of proficiency.

What is horizontal reservation?

- In December 2020, the Supreme Court clarified the position of the law on the interplay of vertical and horizontal reservations.
- A decision by a two-judge Bench in the case of **Saurav Yadav versus State of Uttar Pradesh** dealt with issues arising from the way different classes of reservation were to be applied in the selection process to fill posts of constables in the state.
- **Reservation for Scheduled Castes, Scheduled Tribes, and Other Backward Classes is referred to as vertical reservation.**
- **Horizontal reservation refers to the equal opportunity provided to other categories of beneficiaries such as women, veterans, the transgender community, and individuals with disabilities, cutting through the vertical categories.**
- For example, if women have 50 per cent horizontal quota, then half of the selected candidates will have to necessarily be women in each vertical quota category — i.e., half of all selected SC candidates will have to be women, half of the unreserved or general category will have to be women, and so on.

8.7 Multi state cooperative society (amendment) bill, 2022

In news- The Bill to amend the Multi-State Cooperative Societies (MSCS) Act, 2002, was introduced in the Lok Sabha recently.

Key features of the bill-

- The Bill also seeks to improve the composition of the board and ensure financial discipline, besides enabling the raising of funds in MSCSs.
- The Bill provides for the creation of a central Co-operative Election Authority to supervise the electoral functions of the MSCSs.
- The Authority will have a chairperson, vice-chairperson, and up to three members appointed by the Centre.
- Another provision makes it possible to override the board of directors of the society and the appointment of an administrator, not necessarily a member of the collective.
- The Bill seeks to amend Section 17 of the principal act to allow the merger of any State cooperative society with an existing MSCS. (Opposition members argued that this was beyond the Centre's legislative competency as State cooperatives are not its domain).
- It envisages the creation of a Co-operative Rehabilitation, Reconstruction and Development Fund for the revival of sick MSCSs, financed by existing profitable MSCSs which will have to deposit either Rs. 1 crore or 1% of their net profit.
- In order to make the governance of these societies more democratic, transparent and accountable, the Bill has provisions for appointing a Cooperative Information Officer and a Cooperative Ombudsman.
- To promote equity and inclusiveness, provisions relating to the representation of women and Scheduled Caste/Scheduled Tribe members on MSCS boards have been included.
- The Bill makes only members eligible to be elected to the board or as office bearers of the cooperative society.
- Active members have been defined as those who are availing a minimum level of services from the society or have attended at least three consecutive general meetings.
- The Bill also increases the penalty amount for violation of the law to Rs. 1 lakh and potential imprisonment from six months to a year.

What are MSCSs?

- **Multi-State cooperatives are societies that have operations in more than one state-** for instance, a farmer-producers organisation which procures grains from farmers from multiple States.
- Such MSCSs are **registered under the Multi-State Co-operative Societies Act 2002, and their regulation lies with the Central Registrar.**
- The board of directors are from all the States these collectives operate in and control all finances and administration function.
- There are close to 1,500 MSCSs registered in India, the **highest number being in Maharashtra.**
- A large number of MSCSs are credit societies, while agro-based societies, dairies and banks are also sizeable in number.
- **Indian Farmers Fertilisers Cooperative (IFFCO) has around a third of the market share in fertilizers,** while Gujarat's Amul is a highly profitable dairy cooperative.
- **According to the International Cooperative Alliance (ICA), cooperatives are people-centred enterprises jointly owned and democratically controlled** by and for their members to realise their common economic, social and cultural needs and aspirations.
- **Article 43B of the Constitution inserted by the 97th Amendment** says that "states shall endeavour to promote voluntary formation, autonomous functioning, democratic control and professional management of cooperative societies".
- According to the Ministry of Cooperation, **there are around 8.5 lakh cooperatives in India,** with about 1.3 crore people directly attached to them.

Apex Court on MSCSs-

- Notably, the constitutional domain of States in regulating cooperative societies was upheld by the **Supreme Court** in 2021 when it **struck down a part of the 97th Constitution Amendment.**
- The court held that the **Centre required the ratification of the Amendment by 50% of the state legislatures as it sought to give a framework for State legislation on cooperative societies.**

- The top court upheld only the part of the amendment that related to MSCSs, for which Parliament was competent to enact laws.

History of India's cooperative movement-

- **India's cooperative movement originated in the agriculture and related sectors** as a means for farmers to pool their resources to prevent exploitation by money lenders.
- India's cooperative movement was formalised at the end of the 19th century, **inspired by the German model** of agricultural credit banks.
- **In 1904, the British government in India enacted the Cooperative Credit Societies Act.**
- **Agricultural Credit Cooperative Society, of Kanaginahal village of Gadag District in Karnataka** was the **first cooperative Society** formed under First Cooperative law of India.
- Administrative reforms in 1919 transferred cooperatives to provincial control.
- **After Independence, the framers of the Constitution placed cooperatives in the State list.**
- States made their own laws to regulate cooperatives within their jurisdiction, but in 1984, the Multi-State Co-operative Societies Act (amended in 2002) was enacted by Parliament to consolidate different laws at the central level.

8.8 Family pehchan patra(ID) for J&K residents

In news- Jammu and Kashmir Lt Governor has recently announced that the government has decided to introduce a family pehchan patra (identity card) for residents of the Union Territory.

What is the family pehchan patra proposed for J & K residents?

- It will be an identity card with a unique eight-digit alphanumeric number to identify each family and its members through the head of the family.
- The card will contain details of all members of the family, including their names, ages, qualifications, employment status, etc.
- The card will be linked with the Aadhaar and bank account number of the head of the family.
- It will be a single identifier for every family and individual in the UT that will instantly confirm their eligibility for government welfare schemes and facilitate direct transfer of benefits to their bank accounts with minimum human interference.
- According to government officials, the primary objective is to create an authentic, verified, and reliable database of families in J&K to ensure speedy and transparent doorstep delivery of welfare schemes to eligible beneficiaries.
- The database will help to identify and weed out duplicate ration cards and Aadhaar, and will help the government identify families that may have a number of educated youth, but without jobs.
- As updations such as the removal of a woman's name from the family of her parents and addition in the family of her husband will be carried out automatically, people will no longer have to visit local officials for such purposes.
- The government has said that the database will be created only with the consent of the family.
- But the families that do not consent to have the card will likely face practical difficulties because benefits such as subsidised rations through the targeted public distribution system under the National Food Security Act, free medical treatment, old age/ widow pensions, help to victims of militancy, family pensions in case of death of sole earning member of a family, scholarships, etc. will be linked with the family ID card.

Similar initiatives by other states-

- **Haryana was the first state to introduce** the concept of the family pehchan patra, and **Punjab introduced it** in 2021 for direct transfer of benefits to families who are eligible for various social service schemes of the government.

- In November 2022, the Uttar Pradesh government decided to launch a UP Parivar Kalyan Card for similar purposes.
- Rajasthan has introduced something called a “Jan Aadhaar” which “aims to be the single identifier of a family and also an individual”, and “the sole vehicle on which delivery of all kinds of cash as well non-cash benefits and services are riding and reaching to the door-step of the residents”.

8.9 Law on acid attacks in India

In news- According to data compiled by the National Crime Records Bureau (NCRB), West Bengal and UP consistently record the highest number of such cases generally accounting for nearly 50% of all cases in the country year on year.

Law on acid attacks-

- Until 2013, acid attacks were not treated as separate crimes. However, following amendments carried out in the IPC, acid attacks were put under a separate section (326A) of the IPC and made punishable with a minimum imprisonment of 10 years which is extendable to life along with fine.
- The law also has provisions for punishment for denial of treatment to victims or police officers refusing to register an FIR or record any piece of evidence.
- Denial of treatment (by both public and private hospitals) can lead to imprisonment of up to one year and dereliction of duty by a police officer is punishable by imprisonment of up to two years.
- In 2013, the Supreme Court took cognizance of acid attacks and passed an order on the regulation of sales of corrosive substances. Based on the order, the MHA issued an advisory to all states on how to regulate acid sales and framed the Model Poisons Possession and Sale Rules, 2013 under The Poisons Act, 1919. It asked states to frame their own rules based on model rules, as the matter fell under the purview of states.
- According to the MHA’s directions and the model rules, over-the-counter sale of acid was not allowed unless the seller maintains a logbook/register recording the sale of acid. This logbook was to also contain the details of the person to whom acid is sold, the quantity sold, the address of the person and also specify the reason for procuring acid.
- The sale is also to be made only when the buyer produces a photo ID containing his address issued by the government. The buyer must also prove he/she is above 18 years of age.
- Sellers are also required to declare all stocks of acid with the concerned Sub-Divisional Magistrate (SDM) within 15 days and in case of undeclared stock of acid. The SDM can confiscate the stock and suitably impose a fine of up to Rs 50,000 for a breach of any of the directions.
- The rules ask educational institutions, research laboratories, hospitals, government departments and the departments of Public Sector Undertakings, which are required to keep and store acid, to maintain a register of usage of acid and file the same with the concerned SDM.
- In August 2021, MHA issued another advisory to all States/ UTs to review and ensure that the retail sale of acids and chemicals is strictly regulated in terms of the Poison Rules so that these are not used in crime.

Victim compensation and care-

- Based on Supreme Court directions, the MHA asked states to make sure acid attack victims are paid **compensation of at least Rs. 3 lakhs by the concerned State Government/Union Territory** as the aftercare and rehabilitation cost.
- Out of this, a sum of Rs 1 lakh is to be paid to the victim within 15 days of the occurrence of such an incident to facilitate immediate medical attention and expenses in this regard. The balance sum of Rs. 2 lakhs is to be paid “as expeditiously as may be possible and positively within two months thereafter”.
- States are supposed to ensure that **treatment** provided to acid attack victims in any hospital, public or private, is **free of cost**. The cost incurred on treatment is not to be included in the Rs 1 lakh compensation given to the victim.
- Apart from this, MHA suggested states should also extend social integration programs to the victims for which NGOs could be funded to exclusively look after their rehabilitative requirements.

8.10 Regulation of alcohol consumption and sale in Indian states

In news- More than seventy people died in Bihar due to the consumption of spurious liquor.

How does the Indian constitution view alcohol?

- One of the Directive Principles of State Policy (DPSP) mentions that “in particular, the State shall endeavour to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health.”
- While DPSPs are not in themselves legally enforceable, they set goals that the state should aspire towards to establish conditions under which citizens can lead a good life.
- **According to the Seventh Schedule of the Constitution, alcohol is a state subject, i.e. state legislatures have the right and responsibility to draft laws regarding it,** including “the production, manufacture, possession, transport, purchase and sale of intoxicating liquors.”
- Thus, **laws regarding alcohol differ from state to state, falling in the whole spectrum between prohibition and private sale.**

Some of the states that placed prohibition/regulation on alcohol-

All states have some regulations with regards to alcohol consumption and sale (like age requirements or dry days).

Currently, there are five states with total prohibition and some more with partial prohibition.

Bihar-

- Both the sale and prohibition of liquor was completely banned in 2016.
- Severe punishments were imposed on those found to be flouting the ban, including heavy fines and prison sentences.
- Earlier in 2022, the Bihar government passed an amendment to its prohibition laws, which dials down on punishment to first-time “drinkers” and lets them get away with a fine rather than face arrest.

Gujarat-

- Gujarat has had prohibition since it came into existence as a state in 1960.
- In the 62 years since prohibition has been around in Gujarat, the Act has seen several amendments.
- Notably, in 2009, then chief minister Narendra Modi introduced the **death penalty for sellers/producers if their spurious alcohol caused deaths.**
- However, Gujarat has provisions for **special alcohol licences for hospitality establishments** as well as individuals.

Lakshadweep-

- The Union Territory **banned both the consumption and sale of alcohol** keeping in mind the culture and sentiments of its predominantly Muslim population.
- However, the island of Bangram has a resort with a bar which is allowed to legally serve liquor.

Mizoram-

- In 2019, Mizoram **became a “dry state”** once again after the new government reintroduced prohibition that was repealed in 2015.
- Previously, Mizoram had seen prohibition for 18 years.
- Only military personnel and those with “medical needs” are allowed to consume alcohol.

Nagaland-

- Nagaland introduced total **prohibition in 1989 due to “moral and social” reasons,** for the greater good of its citizens.

- However, in recent times, the Naga government has **mulled partially lifting prohibition** due to various reasons.

Note:

- **Some states with partial prohibition are Karnataka**, which specifically banned country-made arrack in 2007, **Maharashtra** where the districts of Wardha and Gadchiroli have banned on production and sale of liquor, and **Manipur**, where districts of Bishnupur, Imphal East, Imphal West and Thoubal have prohibition.

8.11 60 years of Customs Act, 1962

The Act provides for the implementation and collection of duty on goods imported and exported in the country. This Act also deals with the Import and Export procedures, Prohibitions on importation and exportation of goods, penalties, offences and much more.

Objective of Customs Act and Customs Duty-

The following purposes are the reason why Customs Duty is levied on the import and export of goods in India.

1. To restrict imports for conserving foreign exchange.
2. To protect the imports and exports of goods for achieving the policy objectives of the Government.
3. To regulate export
4. To co-ordinating legal provisions with other laws dealing with the foreign exchange such as the Foreign Trade Act and the Foreign Exchange Regulation Act.
5. To safeguard domestic trade.
6. To protect the revenue of resources.
7. To protect the industries in India from unfair competition.
8. To prevent the smuggling of goods and activities related to the same.
9. To prevent the dumping of goods.

8.12 What is Rule 267 of Rajya Sabha?

In news- During the winter session of Parliament, opposition parties are demanding the Chairperson of Rajya Sabha (RS) to allow a discussion on the latest situation in India-China border by applying Rule 267.

About rule 267 of RS-

- The Rule gives special power to a Rajya Sabha member to suspend the pre-decided agenda of the House, with the approval of the Chairman.
- The Rajya Sabha Rule Book says, "Any member, may, with the consent of the Chairman, move that any rule may be suspended in its application to a motion related to the business listed before the Council of that day and if the motion is carried, the rule in question shall be suspended for the time being: provided further that this rule shall not apply where specific provision already exists for suspension of a rule under a particular chapter of the Rules".
- Any discussion under Rule 267 assumes great significance in Parliament simply because all other business would be put on hold to discuss the issue of national importance.
- No other form of discussion entails suspension of other business.
- Also, the government will have to respond to the matter by replying during the discussions under Rule 267.

Other ways to raise important issues in the House-

- **In Parliament, a member has a number of ways to flag issues and seek the government's reply.** An MP can ask questions related to any issue during the Question Hour in which the concerned minister has to provide oral or written answers.

- **An MP can raise the issue during Zero Hour.** Every day, 15 MPs are allowed to raise issues of their choice in the Zero Hour.
- **An MP can even raise it during Special Mention.** A Chairman can allow up to 7 Special Mentions daily.
- Otherwise, the **MP can try to bring the issue to the government's notice during other discussions such as the debate on the President's speech.**
- Opposition leaders have also used the Budget debate to attack the government politically.

8.13 Golden jubilee of North-Eastern Council (NEC)

In news- The Golden Jubilee of the NEC was observed on the 18th December 2022.

About North Eastern Council (NEC)-

- **Established by an Act of the Parliament in 1971** , NEC was **formally inaugurated on 7th November, 1972 at Shillong, Meghalaya**, marking the beginning of a new chapter of concerted and planned endeavor on the part of the Government of India for the North Eastern Region.
- **Originally consisting of the seven states** of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura, **Sikkim was included as the eighth member** state through the NEC (Amendment) Act, 2002.
- North Eastern Council (NEC) is **under the administrative purview of the Ministry of Development of the North-Eastern Region (MDoNER).**
- Some of the most iconic Institutions of the North Eastern Region such as-
 - The Regional Institute of Medical Sciences (RIMS), Imphal;
 - North East Police Academy (NEPA), Shillong;
 - North East Region Institute of Water and Land Management (NERIWALM), Tezpur;
 - North Eastern Space Application Centre (NESAC), Shillong;
 - Dr. Bhubaneswar Borooah Cancer Institute (BBCI) Guwahati etc. have been set up with NEC support.
- The policy deliberations at the NEC are conducted at the Plenary meetings of the Council.
- Since 1972, the NEC Plenary has been held in various North Eastern States and the national capital on seventy occasions.

8.14 AYURSWASTHYA Yojana

In news- Currently, the Ministry of Ayush is running a Central Sector Scheme namely, AYURSWASTHYA Yojana.

Key features of the scheme-

- The scheme is being implemented with two components (i) **AYUSH and Public Health (PHI)** and (ii) **Centre of Excellence (CoE)** from the Financial Year 2021-22 by merging two erstwhile schemes of this Ministry namely-
 - a. Central Sector Scheme of Grant-in-Aid for Promotion of AYUSH Intervention in Public Health Initiatives (PHI) and
 - b. Central Sector Scheme for assistance to AYUSH organizations (Government / Non-Government Non-Profit) engaged in AYUSH Education/ Drug Development & Research / Clinical Research etc. for upgradation to Centre of Excellence (CoE)
- Under the Centre of Excellence component of AYURSWASTHYA Yojana, financial assistance is provided to eligible individual organizations/institutes for establishing and upgrading their functions & facilities and/or for research & development activities in AYUSH
- Under the Centre of Excellence component of AYURSWASTHYA Yojana, there is provision to support AYUSH institutions/organizations for their up-gradation to the level of Centre of Excellence.

8.15 Abetment of suicide

In news- After TV star Tunisha Sharma allegedly killed herself on the set of a TV show recently, her co-actor, Sheezan Khan, has been booked for abetment to suicide.

What is abetment to suicide?

- Abetment is defined as including instigating, engaging in a conspiracy or assisting in committing the offence.
- **However, abetment is not the same as murder.** The Supreme Court clarified this issue in 1997 in the case of '**Sangarabonia Sreenu v State of Andhra Pradesh**'.
- Despite the intention of the accused to drive a person to commit suicide, abetment of suicide is not the same as murder.
- In the case of a murder, the final 'act' of causing the death of a person is committed by the accused, which is not the case in abetment of suicide.
- **The Indian Penal Code, 1860 makes abetment of suicide a punishable offence.** Section 306 of the Indian Penal Code (IPC) prescribes either a jail term of up to 10 years or a fine or both.
- As per section 306 of IPC, if any person commits suicide, whoever abets the commission of such suicide shall be punished with imprisonment of either imprisonment for a term which may extend to ten years, and shall also be liable to fine.
- **The IPC also has a separate chapter on abetment** and describes who is an abettor under Section 108.
- **Abetment of suicide is a serious offence that is tried in a Sessions court and is cognizable, non-bailable and non-compoundable.**
- A **cognizable** offence is one in which a **police officer can make an arrest without a warrant** from a court. A non-bailable offence means bail is granted to the accused at the discretion of the court and not as a matter of right.
- A **non-compoundable offence is one in which the case cannot be withdrawn by the complainant** even when the complainant and the accused have reached a compromise.

How does a court determine abetment?

- **There are two primary ingredients of the crime of abetment of suicide.** First is a suicidal death. The second ingredient is the intention of the accused to abet such suicide.
- Legally, whether a death is a suicide or not is a determination of a fact, which means evidence has to be evaluated to pronounce that death is a suicide.
- A determination of suicide is made when the deceased person is understood to have known the probable consequence of their act of self-harm before proceeding to do it intentionally.
- Once such a determination is made, then the intention of the person accused of abetment of suicide is looked into.
- The only exception to this is the abetment of the suicide of a woman married for seven years or less.
- Through an amendment in 1983 in the Code of Criminal Procedure, the law was changed to presume that the husband is guilty if his wife commits suicide within seven years of the marriage.
- The amendment was made to curb rising dowry deaths that were categorised as suicides.

8.16 Karnataka passes Bill for new traffic authority

In news- The Karnataka Legislative Assembly has recently passed The Bengaluru Metropolitan Land Transport Authority (BMLTA) Bill, 2022.

Key features of the bill-

- The legislation will be applicable to the Urban Mobility Region of Bengaluru.
- It is aimed at the regulation of development, operation, maintenance, monitoring, (and) supervision of urban mobility within the said region.

- The enactment of the Bill will ensure a Comprehensive Mobility Plan for the gridlocked city, by adopting sustainable urban transport models.
- The legislation also provides for measures such as congestion parking, parking regulations, tolling, special purpose lanes etc. to regulate travel demand in the Urban Mobility Region.
- It addresses the overlap in responsibilities and functions of different institutions and departments related to transport in the city.
- Moreover, the National Urban Transport Policy had also laid down a framework for the integration of various departments to enable holistic transport planning in cities such as Bengaluru.

Composition of BMLTA-

- BMLTA will **consist of 36 members with the Chief Minister of Karnataka as its ex-officio chairman**, along with representatives from agencies such as BBMP, Bangalore Development Authority, Bangalore Metropolitan Region Development Authority, Bengaluru City Police, South Western Railways and National Highway Authority of India.
- Based on the suggestions made in the Assembly, **an MLA elected from Bengaluru**, who is a minister in the state Cabinet, will be its member.
- It will also consist of three experts in the field of urban mobility, corporate governance or Law, Finance or Transport economics, two representatives from civil society organisations working in urban mobility, three representatives from institutions and associations representing the private sector and professional bodies, and two representatives from academic institutions.

Functions of BMLTA-

- BMLTA can establish an appropriate framework for engagement of the private sector in planning, development and management of mobility service delivery and effective contract execution by the Urban Transport Agencies, Traffic Management Agencies and Infrastructure Development Agencies.
- Recommending policy measures, issuance of permits, registration of vehicles, operation of mobility services, handling of goods, management of traffic flow and other issues fall under the ambit of BMLTA.
- The agency will also prepare a parking policy, non-motorised transport policy, transit-oriented development policy, multi-modal integration policy and freight transport policy.
- BMLTA will also have to prepare a traffic management plan at least once a year, with a detailed traffic flow plan for road networks, movement of a certain type of vehicles such as freight and construction vehicles, traffic calming measures including a partial or full closure of streets, traffic management plans for special occasions, incident management plan, emergency evacuation plans etc.

8.17 Methods to resolve inter-state disputes in India

In news- The border dispute between Maharashtra and Karnataka is intensifying, with both states hardening their stance. In this context let's look at how inter-state disputes are resolved in India.

How is the issue being resolved?

- Attempts are often made to resolve inter-state disputes with the cooperation of both sides, with the Centre working as a facilitator or a neutral mediator.
- If issues are resolved amicably, Parliament can bring a law to alter state boundaries, such as the Bihar-Uttar Pradesh (Alteration of Boundaries) Act of 1968 and the Haryana-Uttar Pradesh (Alteration of Boundaries) Act of 1979.
- In the Belagavi issue, Union Home Minister Amit Shah met Chief Ministers Basavaraj Bommai and Eknath Shinde and asked them to form a six-member team, comprising three ministers from each side, to address all boundary issues.

Other methods available-

There are other formal methods in the Constitution to resolve inter-state disputes.

Judicial redressal:

The Supreme Court in its original jurisdiction decides disputes between states. Article 131 of the Constitution reads: "Subject to the provisions of this Constitution, the Supreme Court shall, to the exclusion of any other court, have original jurisdiction in any dispute

- (a) Between the Government of India and one or more States; or
- (b) Between the Government of India and any State or States on one side and one or more other States on the other; or
- (c) Between two or more States, if and in so far as the dispute involves any question (whether of law or fact) on which the existence or extent of a legal right depends: Provided that the said jurisdiction shall not extend to a dispute arising out of any treaty, agreement, covenant, engagements, and or other similar instrument which, having been entered into or executed before the commencement of this Constitution, continues in operation after such commencement, or which provides that the said jurisdiction shall not extend to such a dispute.

Inter-state Council:

- Article 263 of the Constitution gives powers to the President to set up an Inter-state Council for resolution of disputes between states.
- The Council is envisaged as a forum for discussion between the states and the Centre.
- In 1988, the Sarkaria Commission suggested that the Council should exist as a permanent body, and in 1990 it came into existence through a Presidential Order.
- **The provision reads:** "provisions with respect to an inter State Council If any time it appears to the President that the public interests would be served by the establishment of a Council charged with the duty of
 - (a) Inquiring into and advising upon disputes which may have arisen between States;
 - (b) Investigating and discussing subjects in which some or all of the States, or the Union and one or more of the States, have a common interest; or
 - (c) Making recommendations upon any such subject and, in particular, recommendations for the better co ordination of policy and action with respect to that subject, it shall be lawful for the President by order to establish such a Council, and to define the nature of the duties to be performed by it and its organisation and procedure.
- In 2021, the Centre reconstituted the Inter-state Council and the body now has 10 Union Ministers as permanent invitees.
- The standing committee of the Council has been reconstituted with Home Minister as Chairman. Finance minister and the Chief Ministers of Maharashtra, UP, and Gujarat are some of the other standing committee members.

What is the Maharashtra-Karnataka border dispute?

- The border dispute over Belagavi, Karwar and Nipani in North Karnataka is long-standing. When state boundaries were redrawn on linguistic lines as per the States Reorganisation Act of 1956, Belagavi became part of the erstwhile Mysore state.
- Maharashtra claims that parts of Belagavi, where Marathi is the dominant language, should remain in Maharashtra.
- In October 1966, the Centre set up the Mahajan Commission, led by former Chief Justice of India Mehr Chand Mahajan, to resolve the border dispute in Maharashtra, Karnataka and Kerala.
- The Commission recommended that Belgaum and 247 villages remain with Karnataka. Maharashtra rejected the report, and in 2004, moved the Supreme Court.

8.18 Process of Delimitation

- The Election Commission of India said that it has begun the process of delimitation of Assembly and Parliamentary constituencies in Assam.

- Delimitation is the **act of redrawing boundaries of Lok Sabha and state Assembly seats to represent changes in population.**
- The main **objective of delimitation is to provide equal representation** to equal segments of a population.
- The process with respect to Assam will be based on Census data from 2001.
- **Delimitation is carried out by an independent Delimitation Commission**, appointed by the Government of India under provisions of the **Delimitation Commission Act.**
- The **Delimitation Commission is appointed by the President of India** and works in collaboration with the Election Commission of India.
- **It is composed of** a retired Supreme Court judge, The Chief Election Commissioner of India and Respective State Election Commissioners.
- **The Constitution mandates that the Commission's orders are final and cannot be questioned before any court** as it would hold up an election indefinitely.

8.19 Remote voting for migrant workers

In news- The Election Commission (EC) has recently announced that it is ready to pilot remote voting for domestic migrants, so they don't have to travel back to their home states to vote.

About the pilot remote voting plan-

- The commission has developed a prototype for a **Multi-Constituency Remote Electronic Voting Machine (RVM)** that can handle multiple constituencies from a single remote polling booth.
- The EC has invited all recognised eight national and 57 state political parties on January 16, 2023 to demonstrate the functioning of the RVM and has asked for their written views by January 31.
- **The EC had formed a "Committee of Officers on Domestic Migrants"**, which submitted a report in late 2016 after considering various possible solutions such as internet voting, proxy voting, early voting and postal ballots for migrant workers.
- However, all of these ideas were rejected due to reasons such as the lack of secrecy of the vote, the lack of sanctity of one person one vote principle, issues of accessibility for unlettered voters, etc.
- Thus, a technological solution was proposed which relies on the creation of a robust electoral roll and identification mechanisms (to stop duplicate voting), and allow voters to vote remotely, in a safe and controlled environment.
- **The RVM was developed with the assistance of Bharat Electronics Limited (BEL) and the Electronics Corporation of India Limited (ECIL).** It is based on the currently used EVM system.
- As per EC, the **RVMs are "stand alone, non-networked systems,"** effectively providing the voter the same experience as currently used EVMs.
- They will be set up in remote locations outside the state under similar conditions as current polling booths.
- The unique feature of RVMs is that a **single Remote Ballot Unit (RBU) will be able to cater to multiple constituencies** (as many as 72) by using a **"dynamic ballot display board"** instead of the usual printed paper ballot sheet on EVMs.
- The Ballot Unit Overlay Display (BUOD) will show the requisite candidates based on the constituency number read on the voter's Constituency card.
- **A barcode scanning system will be used to read these cards.**

The voting process will be as follows:

- After verifying a voter's identity, their constituency card will be read with a public display showing the constituency details and candidates.
- This will also be displayed privately, on the BUOD in the RVM's RBU.
- The voter will then vote and each vote will be stored constituency-wise in the control unit of the voting machine.
- The VVPAT system is expected to work along the same lines with the new technology.

Note-

- As per the 2011 census (the numbers will have risen since then), there are nearly 45.36 crore migrants in India (both intra and inter state) – amounting to approximately 37 per cent of the country's population.

8.20 Triple test survey for Other Backward Classes in UP

In news- After the Allahabad High Court ordered the Uttar Pradesh government to hold urban local body elections without reservation for OBCs because the 'triple test' requirement for the quota had not been fulfilled, the state set up a commission for this purpose.

What is Triple test survey?

- The triple test requires the government to complete three tasks for finalization of reservation to OBCs in the local bodies. These include:
 - To set up a dedicated commission to conduct a rigorous empirical inquiry into the nature and implications of the backwardness in local bodies;
 - To specify the proportion of reservation required in local bodies in light of recommendations of the commission, so as not to fall foul of overbreadth;
 - To ensure reservation for SCs/STs/OBCs taken together does not exceed an aggregate of 50 per cent of the total seats.
- These triple test/conditions were outlined by the Supreme Court in the case of *Vikas Kishanrao Gawali vs. State of Maharashtra and others*, decided on March 4, 2021.
- This is the first time that the triple test exercise will be carried out in Uttar Pradesh.

Note:

- The formula used for the OBC reservation in the 2022 local bodies was the same followed in the polls held in 1995, 2000, 2006, 2012 and 2017.
- The elections were held on the basis of the estimates collected through the rapid surveys of the OBC families.
- Even the panchayat elections were based on the rapid surveys conducted in May 2015 and the same yardstick was followed in the 2021 rural body elections.
- The arrangement for reservation of backward classes in local bodies was made in the Uttar Pradesh Municipality Act, 1916, in 1994.

8.21 Jan Vishwas (Amendment of Provisions) Bill, 2022

In news- The Union Minister for Commerce and Industry Minister introduced the Jan Vishwas (Amendment of Provisions) Bill, 2022 recently.

Key features of the bill-

- The bill seeks to decriminalize minor offenses to promote ease of business.
- Besides the decriminalization of minor offenses, the bill envisages the rationalization of monetary penalties, depending on the gravity of the offense, bolstering trust-based governance.
- Over 100 provisions in different laws pertaining to 19 Ministries are sought to be decriminalised by this Bill.
- A unique feature of the proposal is an increase of 10% of the minimum amount of fine and penalty levied, after the expiry of every three years, once the bill becomes a law.
- It amends 42 Acts to reduce the compliance burden on individuals and businesses and ensure ease of doing business.
- Some Acts that are amended by the Bill include:

- The Press and Registration of Books Act 1867.
- The Indian Post Office Act, 1898.
- The Boilers Act 1923.
- The Indian Forest Act 1927.
- The Public Debt Act 1944.
- The Environment (Protection) Act, 1986.
- The Public Liability Insurance Act, 1991.
- The Information Technology Act, 2000.
- As per the Bill, the **central government may appoint one or more adjudicating officers for the purpose of determining penalties**. The adjudicating officers may: (i) summon individuals for evidence, and (ii) conduct inquiries into violations of the respected Acts.
- These Acts include: the Agricultural Produce (Grading and Marking) Act, 1937, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, and the Public Liability Insurance Act, 1991.
- **The Bill also specifies the appellate mechanisms for any person** aggrieved by the order passed by an adjudicating officer. For instance, in the Environment (Protection) Act, 1986, appeals may be filed with the National Green Tribunal within 60 days from the order.
- The bill was later referred to a 31-member joint committee of Parliament for scrutiny.

9. SECURITY

9.1 Indian Coast Guard Advanced Light Helicopter (ALH) Mk-III squadron

In news- In a major boost to further strengthening the Coast Guard Region East, 840 Sqn (CG), an Indian Coast Guard Advanced Light Helicopter (ALH) Mk-III squadron, was commissioned recently.

About Advanced Light Helicopter-

- The ALH Mk-III helicopters, indigenously manufactured by Hindustan Aeronautics Limited (HAL), features state-of-the-art equipment including advanced RADAR as well as Electro optical sensors, Shakti engines, full glass cockpit, high-intensity searchlight, advanced communication systems, automatic identification system as well as search-and-rescue homer.
- This feature enables the helicopter to undertake maritime reconnaissance as well as carry out search and rescue at extended ranges while operating from ships, both by day and night.
- The aircraft has the ability to switch roles from an offensive platform with heavy machine gun to that of a benign one carrying a Medical Intensive Care Unit to facilitate transfer of critically ill patients.
- A total of 16 ALH Mk-III aircraft have been inducted in the Indian Coast Guard in a phased manner and four of these aircraft are positioned in Chennai.
- It will provide a major fillip to the abilities of Indian Coast Guard in the security sensitive waters off Tamil Nadu and Andhra region.

9.2 New design of President's Standard and Colour and Indian Navy Crest

In news- The Hon'ble President of India has approved the introduction of a new design for the President's Standard and Colour and Indian Navy Crest for the Indian Navy.

About the new designs-

- While the design of the President's Standard incorporated the new ensign of the Navy unveiled by the Prime Minister in September 2022, the **new crest of the Navy does away with the symbolic nautical rope** which was there in the earlier crest, a change already introduced in the new ensign.

- The St George's Cross in the earlier ensign of the Indian Navy Crest was removed.
- The **new ensign crest of the Indian Navy on a navy blue background** encompassed an octagon representing the royal seal or **Rajmudra of Chhatrapati Shivaji Maharaj**.
- The anchor inside the octagon, which was earlier a 'foul anchor' entangled in a nautical rope was replaced with a '**clear anchor without the rope**' underscoring the steadfastness of the Indian Navy.'
- While the practice of carrying the Standards or Colours, a symbolic flag into battle is long gone, the tradition of receiving, holding and carrying them continues even today in the Indian Armed forces.
- **The erstwhile design of the President's Standard and the Colour for the Indian Navy was instituted in September 2017.**
- The design comprised one horizontal and vertical red band intersecting at the centre, known as St George's cross and the national emblem inserted at their intersection.
- **The Navy has said that the new design of the President's Standard and Colour comprises three main constituents —**
 - The national flag in the upper left canton adjacent to the staff.
 - The state emblem under-scribed with 'Satyamev Jayate' in golden colour on the upper right canton on the fly side, and
 - A Navy Blue gold octagon below the golden state emblem.
- The octagon has twin golden octagonal borders, encompassing the golden national emblem — lion capital of Ashoka – under-scribed with 'Satyamev Jayate' in blue Devnagri script resting atop an anchor, and superimposed on a shield.
- **The new naval crest has a traditional naval clear anchor below the Ashoka lion head with 'Sham No Varunah' inscribed below it, which has been taken from Vedas and means 'may the ocean God be auspicious unto us'.**
- The phrase was adopted as the motto of the Indian Navy at the suggestion of Chakravarti Rajagopalachari, the first Indian Governor General of Independent India.

Note:

- The President's Standard and President's Colour are awarded to static and mobile formations of the Indian Navy respectively, to acknowledge their distinguished and meritorious service to the Nation.
- The Indian Navy was the first among the three Services to be awarded the President's Colour on 27 May 1951 by the then President Dr. Rajendra Prasad.
- In the Indian Navy, the President's Colour has been awarded to the Western, Southern, and Eastern Naval Commands, both Western and Eastern Fleets, the Submarine Arm, the Naval Air Arm, INS Shivaji, INS Valsura and the Indian Naval Academy.
- The 22nd Missile Vessel Squadron was the first Naval Combatant Squadron to be honoured with the President's Standard.

9.3 What is end-to-end encryption?

In news- Recently, Apple has announced that it will be increasing the number of data points protected by end-to-end encryption on iCloud from 14 to 23 categories.

About end-to-end encryption-

- It is a communication process that encrypts data being shared between two devices.
- It prevents third parties like cloud service providers, internet service providers (ISPs) and cybercriminals from accessing data while it is being transferred.
- The process of end-to-end encryption uses an algorithm that transforms standard text into an unreadable format.
- This format can only be unscrambled and read by those with the decryption keys, which are only stored on endpoints and not with any third parties including companies providing the service.
- It can also be used to control users' authorisation when accessing stored data, which seems to be what Apple intends to do.

- Some of the popular instant-messaging apps that use it are Signal, WhatsApp, iMessage, and Google messages.
- However, instant messaging is not the only place where user data is protected using end-to-end encryption.
- It is also used to secure passwords, protect stored data and safeguard data on cloud storage.
- End-to-end encryption ensures that user data is protected from unwarranted parties including service providers, cloud storage providers, and companies that handle encrypted data.
- No one else can access this data and it remains secure even in the case of a data breach in the cloud storage.
- The data can only be accessed with access to the device passcode, password, recovery contact, or recovery key.
- However, end-to-end encryption does not protect metadata, which includes information like when a file was created, the date when a message is sent and the endpoints between which data was shared.

Reasons for government agencies unhappy with it-

- Attempts by government agencies across the globe, in the past, to access encrypted data hosted and stored by tech companies have met with strong resistance.
- In 2019, the U. S., the U. K., and Australia planned to pressure Facebook to create a backdoor into its encrypted messaging apps.
- Australia, in 2018, passed laws that would force tech companies and service providers to build capabilities allowing law enforcement secret access to messages on platforms like WhatsApp and Facebook.

9.4 INS Mormugao (Pennant D67)

In news- The second of the Project 15B stealth-guided missile destroyers built by Mazagon Dock Shipbuilders Limited (MDSL), INS Mormugao (Pennant D67), was commissioned into the Indian Navy recently.

About INS Mormugao-

- The ship, named after a key port in Goa, was commissioned a day before the Goa Liberation Day celebrations.
- Over the last decade, the Indian Navy has commissioned **three guided missile destroyers of the Kolkata class – INS Kolkata, INS Kochi, and INS Chennai**, under the project codenamed 15A.
- These ships were a step ahead of their precursor Delhi class of ships — INS Delhi, INS Mysore, and INS Mumbai.
- A ship ‘class’ describes a group of vessels of similar tonnage, usage, capabilities, and weaponry.
- The contract for four guided missile destroyers more advanced than the Kolkata class was signed in January 2011.
- This was **Project 15B**, and the lead ship, INS Visakhapatnam (Pennant D66) was commissioned into the Navy in November 2021.
- **Designed by the Warship Design Bureau, Indian Navy’s in-house warship design body**, and built by MDSL in Mumbai, the **four ships of Project 15B** were to be **named after four major cities around the country — Visakhapatnam, Mormugao, Imphal, and Surat**.
- A ship class is identified by its lead ship, INS Visakhapatnam.
- It incorporates advanced stealth features and a higher degree of automation.
- The sleeker hull design and the radar-transparent deck fittings make the vessels difficult to detect.
- The ship has around **75 percent indigenous content**.
- INS Mormugao and the other three ships in the class have a total atmospheric control system (TACS) that offers protection to the crew from chemical, biological, and nuclear threats, as well as a state-of-the-art combat management system.
- The warships have a secure network for data from its sensors and weapons systems.
- The ship’s firepower consists of vertically launched Barak-8 surface-to-air missiles and BrahMos surface-to-surface cruise missiles for long-range engagement of shore- and sea-based targets.

- The ‘combined gas and gas’ (COGAG) configuration integrates four gas turbines. The propulsion system allows the ship to reach a maximum speed of 30 knots (55 km/h), and a maximum range of 4,000 nautical miles (7,400 km).
- Guided missile destroyers are capable of anti-aircraft and anti-submarine warfare, apart from anti-surface operations.

9.5 Twitter’s new anti-doxxing policy

In news- Twitter has suspended the account of several journalists in the United States, and according to its owner, this was in continuation of the social media **platform’s new anti-doxxing policy**.

What is doxxing?

- Doxxing is basically the revealing of someone’s intimate information, where harassment is the intent.
- It is a popular and controversial tactic used against those with opposing political views and sometimes even celebrities and influencers have been doxxed with real-life consequences.
- In many cases, harassers have used this private information to send SWAT teams or armed police to the homes of many of the victims.
- This private information includes one’s address, phone number, financial information, etc.
- Doxxing sprang from 1990s online hacker culture, which was a way for hackers to unmask rivals they were feuding with.

Twitter’s policy-

- Twitter’s policy **now includes sharing the live location** of any individual as a possible “serious safety and security risk,” and this **is not allowed**. The older version of the policy did not mention the live location aspect.
- As per new policy, users may not publish other people’s private information without “their express authorization and permission, and threatening to expose such information is also prohibited.”
- The policy goes on to describe revealing what information would be considered doxxing. This includes:
- Home address or physical location information, including street addresses, GPS coordinates or other identifying information related to locations that are considered private.
- Live location information, including information shared on Twitter directly or links to 3rd-party URL(s) of travel routes, actual physical location, or other identifying information that would reveal a person’s location, regardless if this information is publicly available.
- Identity documents, including government-issued IDs and social security or other national identity numbers.
- Contact information, including non-public personal phone numbers or email addresses.
- Financial account information, including bank account and credit card details.
- Other private information, including biometric data or medical records.
- Media of private individuals without the permission of the person(s) depicted.

According to the policy, violation of these can result in the account getting locked and continued violations can result in a permanent suspension. But sharing anyone’s live location without express permission will lead to an automatic suspension.

9.6 BSF ‘Prahari’ app

In news- The Union Home Minister has recently launched mobile App ‘Prahari’ and manual of Border Security Force.

What is mobile App ‘Prahari’?

- The BSF ‘Prahari’ app is a great example of Proactive Governance.

- Now jawans can get personal information and information related to accommodation, Ayushman-CAPF and leaves on their mobiles.
- Be it GPF, Bio Data or grievance redressal on “Centralized Public Grievance Redress and Monitoring System” (CP-GRAMS) or information on various welfare schemes, now Jawans can get all this information through the app and this app will also connect them with the portal of the Ministry of Home Affairs.

About Border Security Force (BSF)-

- It is India’s border guarding organization on its border with Pakistan and Bangladesh.
- It is one of the five Central Armed Police Forces of India, and was raised in the wake of the 1965 War on 1 December 1965.
- Its motto is “Duty Unto Death”.
- It is the only CAPF to have a Full-fledged Water Wing, Air Wing and even an Artillery Regiment of its own.
- The BSF has its own cadre of officers but its head, designated as a Director-General (DG), since its raising has been an officer from the Indian Police Service.
- It currently stands as the world’s largest border guarding force.
- It has been termed as the First Line of Defence of Indian Territories.

Central Armed Police Forces (CAPF) of India-

CAPF is further classified into three:

1. **Border Guarding Forces**—Assam Rifles (AR), Border Security Force (BSF), Indo-Tibetan Border Police (ITBP), and Sashastra Seema Bal (SSB).
2. **Forces for Internal Security**—Central Industrial Security Force (CISF) and Central Reserve Police Force (CRPF).
3. **Special Task Force**—National Security Guard (NSG).

10. SCIENCE AND TECHNOLOGY

10.1 Monkeypox now called mpox

In news- The World Health Organisation (WHO) has recently announced that it would start using the term “mpox” for monkeypox.

Naming of viruses:

- The naming of viruses is the responsibility of the International Committee on the Taxonomy of Viruses (ICTV).
- Prior to the 2022 global monkeypox outbreak, there was already a process underway to reconsider the naming of all orthopoxvirus species, including monkeypox virus.
- This will continue under ICTV leadership.
- The change of name, announced after a series of consultations with global experts, has been provoked by the racist connotations that “monkeypox” sometimes carries.
- As per WHO, both names will be used simultaneously for one year while “monkeypox” is phased out.

What is Monkeypox?

- Monkeypox is a viral zoonotic disease that occurs primarily in tropical rainforest areas of central and west Africa and is occasionally exported to other regions.
- Monkeypox is a viral zoonosis (a virus transmitted to humans from animals) with symptoms similar to those seen in the past in smallpox patients, although it is clinically less severe.

- With the eradication of smallpox in 1980 and subsequent cessation of smallpox vaccination, monkeypox has emerged as the most important orthopoxvirus for public health.
- Monkeypox virus is an enveloped double-stranded DNA virus that belongs to the Orthopoxvirus genus of the Poxviridae family.
- There are two distinct genetic clades of the monkeypox virus: the central African (Congo Basin) clade and the west African clade.
- The Congo Basin clade has historically caused more severe disease and was thought to be more transmissible.
- The geographical division between the two clades has so far been in Cameroon, the only country where both virus clades have been found.
- Various animal species have been identified as susceptible to monkeypox virus including rope squirrels, tree squirrels, Gambian pouched rats, dormice, non-human primates and other species.
- Animal-to-human (zoonotic) transmission can occur from direct contact with the blood, bodily fluids, or cutaneous or mucosal lesions of infected animals.
- Human monkeypox was first identified in humans in 1970 in the Democratic Republic of the Congo and was first discovered in captive monkeys in 1958.

10.2 Satellite Earth Station Gateway

In news- The Telecom Regulatory Authority of India (TRAI) has released recommendations on 'Licensing Framework for Establishing and Operating Satellite Earth Station Gateway (SESG).

Key recommendations-

- The telecom regulator suggested a separate satellite earth station gateway (SESG) license under the Indian Telegraph Act.
- The SESG license will not form part of the Unified License (UL) and the service area for the license shall be at a national level.
- TRAI also recommended that the SESG licensee may establish, maintain, and work SESGs anywhere within the territory of India for all types of satellite systems for which the government has given permission.
- TRAI added that SESG may provide satellite-based resources to any entity, which holds license/permission granted by the department of telecommunication (DoT) or ministry of information and broadcasting (MIB) and is permitted to use satellite media for the provision of services under its license/ permission.
- According to the recommendations, the SESG licensee may establish SESGs in respect of one or more government-approved satellite systems and it shall not be permitted to provide any kind of telecommunication service or broadcasting service directly to the consumers, for the provision of which, a separate license/authorisation/permission is required from the government.
- Trai recommends the SESG licence shall be valid for 20 years from the effective date of the licence with a provision of renewal for 10 years.
- It also indicated that only the companies registered under the Companies Act shall be eligible to apply for the grant of their license.

What is a Satellite Earth Station Gateway?

- A satellite gateway, also referred to as a teleport or hub, is a ground station that transmits data to/from the satellite to the local area network.
- It houses the antennas and equipment that convert the Radio Frequency (RF) signal to an Internet Protocol (IP) signal for terrestrial connectivity

10.3 Semi-Automated Offside Technology (SAOT)

In news- FIFA is using SAOT for offside decisions in the ongoing edition of the Football world cup.

What is SAOT?

- **There are two parts to the technology** — a **sensor inside the match ball** (Adidas's Al Rihla) that is held using suspension technology, and **existing tracking tools** that are part of the VAR system as we know.
- **Kinexon, a German company that specialises in providing sensor networks and computing solutions, has designed a small in-ball device** which gives precise positional data and also **detects ball movement in a three-dimensional space**.
- Every time the ball is hit, data is sent in real time (at a whopping 500 frames per second) to a network of antennae installed around the playing field.
- Additionally, there are 12 Hawk-Eye cameras set up around the turf that shadow both the ball and the players, with as many as 29 separate points in the human body tracked.
- The coming together of the ball sensor and the Hawk-Eye cameras is in effect SAOT, which FIFA says allows for decisions that are highly accurate and quick.
- **These two data sets are run through artificial intelligence software which generates automated alerts about offsides to the match officials.**
- This replaces the manual effort taken in poring over replays for minutes on end.
- FIFA has made it clear that SAOT is only a confirmatory tool.

10.4 Zombie virus

In news- Recently, scientists revived a 48,500-year-old 'Zombie Virus' buried in ice in Russia.

What is Zombie Virus?

- Zombie virus is the term given to a virus that is frozen in ice and therefore dormant.
- It does not mean that it is a virus that will turn you into a zombie, like those in horror movies and shows.
- However, in sync with the analogy, these viruses are 'undead' like the fictional zombie, and can come back alive and active under certain circumstances.

Key updates-

- European researchers have revived 13 "zombie viruses" from Russia's Siberian permafrost.
- The study revealed that one of these viruses, Pandoravirus yedoma, is more than 48,500 years old. It breaks the previous record held by a 30,000-year-old virus that was uncovered by the same team in 2013.
- Other viruses are also tens of thousands of years old.
- According to the study, it is global warming that is responsible for the revival of the Zombie Virus.
- The viruses were infectious despite being trapped in the frozen ground for many millennia.
- The researchers found out that the Zombie Viruses could pose a "health danger" after studying the live cultures.
- The researchers said the biological risk of reviving the viruses was "totally negligible" because of the strains they targeted, which were capable of infecting amoeba microbes.

10.5 Powerless Heating Technology

In news- New low cost 'Powerless Heating System' activated with water can heat food in remote areas.

What is a Powerless Heating System?

- A new low-cost heating system which can be activated by plain water anytime anywhere and **does not require any fuel or electricity to heat or power it**, can act as a heating solution in any location.
- Dr. Sumer Singh, Associate Professor, Department of Design, IIT Delhi along with his research team addressed this with a technology that **works on chemical energy** called 'Powerless Heating Technology'.

- The **active heating element consists of a mixture of eco-friendly minerals and salts, which generates exothermic energy** resulting in heat on contact with water.
- This **provides enough energy to raise the temperature of any food or beverage by 60 to 70 degree Celsius.**
- The **weight of the heater is only 50 grams**, and after every heating, the by-product (natural mineral rock) inside the heating pad can be disposed of.
- The rock helps in improving the fertility of the soil and is 100 % biodegradable.
- **With this technology, users can heat ready-to-eat food, make instant noodles, and any beverage like tea, coffee, etc.**
- **The by-product of the heating process is a natural mineral that easily integrates into the soil without any toxic effects.**
- North East Center for Technology Application and Reach (NECTAR), an autonomous body under the Department of Science Technology, Govt. of India, supported the team to develop a food box and a liquid container that can be integrated with the Powerless Heating Technology.
- This Powerless Heating Technology eliminates the need for burning forest wood for heating purposes, thus also reducing forest fires, which is a major problem in the North Eastern parts of the country.
- Anchiale Technologies, a Gurgaon-based spin-off start-up, is scaling up this technology and has started supplying it to the Indian Navy and some food manufacturing companies and a patent for the technology has been filed.
- A nondisclosure agreement (NDA) has been signed with the Indian Tobacco Company (ITC) for integration of this technology in their food products.

10.6 World's first steam-propelled spacecraft

In news- Japan's space agency JAXA has successfully used water to propel a spacecraft (EQUULEUS).

About the spacecraft-

- Japan claimed that it represents "the world's first successful orbit control beyond low-Earth orbit using a water propellant propulsion system."
- The EQUULEUS mission's primary goal is to demonstrate low-energy trajectory control technologies for reaching deep space locations such as EML2 using less fuel.
- It performed a maneuver that moved it toward its planned orbital path on the second Earth-Moon Lagrange point (EML2), located beyond the Moon.
- To get there it used an engine named AQUARIUS (AQUA ResIstojet propUlsion System) that uses water as fuel. The craft uses waste heat from a communications kit to heat the water into steam that is squirted out to produce thrust.
- Lagrangian points are locations in space where the gravity of large objects, such as planets, are balanced out by the centrifugal force of a spacecraft, allowing for a very stable orbit.
- Much like NASA's CAPSTONE mission, which is testing a lunar orbit for the U.S. space agency's lunar Gateway orbital station project, the EQUULEUS spacecraft will allow scientists to test the stability of EML2 for a potential construction of a deep spaceport that will enable deep space exploration.
- The mission will carry out a number of investigations, including testing of the radiation environment to help determine what precautions future astronauts would have to take out in the deep space location.
- EQUULEUS carries an instrument called DELPHINUS (DEtection camera for Lunar impact PHenomena IN 6U Spacecraft) designed to observe Lunar impact flashes and near-Earth asteroids from EML2.
- Another instrument aboard EQUULEUS will observe Earth's plasmasphere.
- The plasmasphere, or inner magnetosphere, is a region of the Earth's magnetosphere consisting of low-energy plasma.
- It is located above the ionosphere. The outer boundary of the plasmasphere is known as the plasmopause, which is defined by an order of magnitude drop in plasma density.

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10.8 Brain Chip

In news- Elon Musk's brain-implant Company Neuralink is facing a federal probe in the US after over 1,500 animals were killed in testing since 2018.

What are brain implants?

- Brain implants, often referred to as neural implants, are technological devices that connect directly to a biological subject's brain – usually placed on the surface of the brain, or attached to the brain's cortex.
- A common purpose of modern brain implants and the focus of much current research is establishing a biomedical prosthesis circumventing areas in the brain that have become dysfunctional after a stroke or other head injuries.
- This includes sensory substitution, e.g., in vision.
- Other brain implants are used in animal experiments simply to record brain activity for scientific reasons.
- Some brain implants involve creating interfaces between neural systems and computer chips.

About Neuralink

- Founded in 2016 by Musk and a group of engineers, Neuralink is building a brain chip interface that can be implanted within the skull, which it says could eventually help disabled patients to move and communicate again, and also restore vision.
- Neuralink's device has a chip that processes and transmits neural signals that could be transmitted to devices like a computer or a phone.

- The company hopes that a person would potentially be able to control a mouse, keyboard or other computer functions like text messaging with their thoughts.
- The San Francisco and Austin-based company also aspires to cure neurological conditions such as Alzheimer's and dementia.
- Neuralink has yet to secure U.S. regulatory approval to move to human trials.

10.9 Invasive Group A Strep (iGAS)

In news- Many children have died recently from an invasive condition caused by iGAS.

What is iGAS?

- Strep A - or Group A streptococcus (GAS) - is a type of bacterium found in the throat and on the skin.
- The illness can also cause other respiratory and skin infections, such as Strep throat, impetigo and scarlet fever.
- On rare occasions, the bacteria can get into the bloodstream and cause an illness called invasive Group A Strep (iGAS).
- While still uncommon, there has been an increase in invasive Strep A cases in 2022, particularly in children under 10.
- It can be spread through coughs, sneezes and skin-to-skin contact.
- While scarlet fever is usually a mild illness, it is highly infectious.
- Symptoms for Strep A can include pain when swallowing, fever, swollen tonsils with white patches, a headache, swollen neck glands, a high temperature or a skin rash.
- A red body rash with a sandpapery feel can also be a symptom.
- The bacteria can cause a whitish coating to appear on the tongue, which eventually peels, leaving the tongue red, swollen and covered in bumps also known as "strawberry tongue".

What is Strep A?

- A type of **bacteria** sometimes found in the throat or on the skin
- **Very rare** but can cause **severe/life threatening** illness and be **contagious**
- Treatable with **antibiotics**

What are the symptoms?



Most healthy people remain symptom free



Scarlet fever (high temperature, sore throat, swollen neck glands, rash)



Throat infection



Skin infections

Seek medical help if you have think you are showing symptoms

Source: NHS



10.10 3.6-meter telescope detects kilonova emission

In news- First data taken by the 3.6-meter telescope has detected unexpected kilonova emission from 'a long-duration gamma-ray burst'.

Key findings-

- While tracing a burst of high-energy light detected in 2021, from the outskirts of the Milky Way located approximately 1 billion light-years away, astronomers have spotted the first astronomical event in which a long gamma-ray bursts (GRBs) has been accompanied by the unexpected **discovery of a kilonova emission**.
- Generally, **kilonova are visible and infrared light associated with short-period GRBs** thought to be heat produced by the radioactive decay of heavier elements.
- **Photometric observations taken with the 3.6 m Devasthal Optical Telescope(DOT) have provided vital information on the earliest phase of a kilonova ever detected**, radically changing the understanding of scientists about the origin of GRBs.
- **GRBs are powerful astronomical cosmic bursts of high-energy gamma-ray. GRB emits more energy in a few seconds than our Sun** will emit in its lifetime and has **two distinct emission phases**:
 - a. **The short-lived prompt emission** (the initial burst phase that emits gamma-rays).
 - b. A long-lived multi-wavelength afterglow phase.
- **The prompt emission (initial gamma-ray emission) of GRBs are automatically discovered** by space-based gamma-ray missions such as NASA's Fermi Gamma-ray Space Telescope, Neil Gehrels Swift Observatory, and India's AstroSat.
- In recent years, scientists have discovered a special phenomenon called a **kilonova of visible and infrared light with short-period GRBs, also known as a potential source of gravitational waves**.
- However, observing kilonovas at near-infrared wavelengths is technically challenging, and **only a few telescopes on Earth, including the 3.6-m DOT of the Aryabhata Research Institute of Observational Sciences (ARIES), can detect kilonova and gravitational wave objects** at these wavelengths upto faint limits.
- The scientists from the ARIES, an autonomous institute of DST, used data from the **3.6 m DOT** of the ARIES along with other telescopes, including Hubble Space Telescope in studying the aftermath of the long GRB (GRB 211211A), detected by the NASA's Neil Gehrels Swift Observatory and the Fermi Gamma-ray Space Telescope on December 11, 2021.

3.6 m Devasthal Optical Telescope (DOT)-

- It is a clear-aperture **Ritchey–Chrétien telescope built by Aryabhata Research Institute of Observational Sciences (ARIES)**.
- It is **located at the Devasthal Observatory site near Nainital, Kumaon, India**.
- ARIES operates another 1.3m telescope at the same location.
- The telescope was activated remotely in March 2016 by Indian and Belgian Prime Ministers.
- The telescope optics has been built in collaboration with the Belgian firm Advanced Mechanical and Optical System (AMOS).
- The 3.6m DOT is currently the **largest reflecting telescope in Asia**.
- It intends to fill a large longitudinal gap in the 4m class of telescopes in the Asia region.
- It features an optical spectrograph, a CCD imager and a near-infrared spectrograph.
- The telescope is also the **first of its kind in India that features an active optics system**, featuring a wavefront sensor and pneumatic actuators which compensates for small distortions in the shape **of the 4.3 tonne mirror due to gravity** or atmospheric aberrations.

10.11 OpenAI's ChatGPT

In news- Recently, OpenAI, the company best known for Dall-E, the AI-based text-to-image generator, has introduced a new chatbot called ChatGPT.

What is ChatGPT?

- ChatGPT is a 'conversational' AI and will answer queries just like a human would.

- So one can ask ChatGPT for anything; tips on how to set up a birthday party, write an essay on why parliamentary democracy is better, and even a fictional meeting between two well-known personalities.
- The reason ChatGPT has gone viral is because of the kind of responses it gives, being seen as a replacement for much of the daily mundane writing, from an email to even college-style essays.
- OpenAI has created ChatGPT, a start-up focused on artificial intelligence and its potential use cases.
- OpenAI's notable investors include Microsoft, Khosla Ventures and Reid Hoffman's charitable foundation.
- According to OpenAI's description, ChatGPT can answer "follow-up questions", and can also "admit its mistakes, challenge incorrect premises, and reject inappropriate requests."
- It is based on the company's GPT 3.5 series of language learning models (LLM).
- GPT stands for Generative Pre-trained Transformer 3 and this is a kind of computer language model that relies on deep learning techniques to produce human-like text based on inputs.
- The model is trained to predict what will come next, and that's why one can technically have a 'conversation' with ChatGPT.
- According to OpenAI, the chatbot was also trained using "Reinforcement Learning from Human Feedback (RLHF)."
- Currently, it is open in beta to all users.
- It has been trained to decline 'inappropriate' requests, presumably those which are 'illegal' in nature.
- The chatbot gives answers which are grammatically correct and read well, though some have pointed out that these lack context and substance, which is largely true.
- ChatGPT is capable of writing fiction, but not at the level of a human.
- Google had recently showcased how its LaMDA chatbot is being used to help with fiction writing, but it too admitted that this was only a helper right now and cannot take over the entire task.
- ChatGPT has limitations, as it may generate incorrect information, and create biased content.

10.12 World Ayurveda Congress

In news- 9th World Ayurveda Congress & Arogya Expo 2022 was organized in Goa.

World Ayurveda Congress-

- The World Ayurveda Congress (WAC) is a **platform established by the World Ayurveda Foundation** to propagate Ayurveda globally in its true sense.
- The **first WAC was held in 2002 at Kochi** as an outreach programme, to create greater awareness and opportunities in the practice, science, and trade of Ayurveda.
- **Theme - 'Ayurveda for One Health.'**

Note:

- **The WHO defines 'One Health' as an approach** to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes.
- The 'One Health' approach is critical to addressing health threats in the animal, human and environment interface.

World Ayurveda Foundation-

- Founded in 2011, the World Ayurveda Foundation (WAF) is an initiative by Vijnana Bharati aimed at global propagation of Ayurveda.
- As part of a larger intellectual movement under the aegis of the Swadeshi Science Movement undertaken by Vijnana Bharati, WAF is a platform that would take Ayurveda to the world for all the benefits mankind can draw from traditional health sciences.
- The objectives of WAF reflect global scope.
- Propagation and encouragement of all activities – scientific and Ayurveda-related – are the core principles.

10.13 Sindhuja-I: Sea Wave Energy Converter

In news- Recently, researchers at IIT Madras have developed and deployed a system that could generate electricity using energy from seawaves.

About the Sindhuja-I:

- The system, dubbed Sindhuja-I (which means 'generated from the ocean'), was **deployed by the researchers about six kilometres from the coast of Tuticorin in Tamil Nadu**, where the sea has a depth of about 20 metres.
- Sindhuja-I can currently **produce 100 watts of energy**.
- It **consists of a floating buoy, a spar and an electrical module**.
- **The buoy moves up and down as the waves oscillate up and down.**
- **The relative motion is used by an electric generator to produce power.**
- But building such a complex system at an offshore location comes with its own set of challenges.
- For example, the amount of energy generated from wind energy fluctuates over the course of the day and over the course of the year as the climate changes.
- While the IIT Madras researchers wave energy generation device uses a technology called **"point absorber wave energy converter"**, it is only one of the many such technologies being developed by companies around the world.
- IIT Madras partnered with a start-up Virya Paramita Energy (VPE) Pvt Ltd, and Motilal Nehru National Institute of Technology (MNNIT) Allahabad, for this test.
- **Islay LIMPET in Scotland, the first grid-connected wave energy power device in the world** deployed in 2000, uses a shoreline device that uses **"Oscillating Water Column" technology** to generate power. It was later decommissioned in 2018.

10.14 PathoDetect Kit

In news- Pune-based Mylab Discovery Solutions private limited has launched PathoDetect Kit for TB detection recently.

What PathoDetect Kit?

- It simultaneously detects multiple drug resistance to Rifampicin and Isoniazid in a single test (**tuberculosis and multidrug-resistant tuberculosis**).
- Mylab had received Central Drugs Standard Control Organisation (CDSCO), TB Expert Committee and ICMR approval for the first indigenous TB Detection kit to detect tuberculosis.
- The kit has been named **PathoDetect MTB RIF and INH drug resistance kit**.
- The kit is an RT-PCR-based kit for accurate detection and will be used with Mylab Compact device systems, which will allow automated testing of multiple samples within two hours.
- The test kit will cost Rs 650 and the kit combined with the Mylab Compact device platform will fill the current gaps in tuberculosis testing,
- **With automation, the complete testing process can be done even in rural areas with the mobile molecular lab.**
- The test kits have been designed to **work in ambient temperatures** compared to existing PCR options which needed 2-8 degrees cold storage.
- The **TBConnect App** — an Integrated TB Workflow app from diagnostics to treatment, will also directly push results to the central grid and needs no manual upload.
- Presently there are two different tests to be conducted: one to detect TB and the other to check drug resistance – against only one drug (Rifampicin).
- With this kit, there will be **no liquid handling and it is a cartridge-based system**.

Note:

- Annually, 20 lakh new cases of TB are detected and around 4.9 lakh deaths are reported every year due to the disease.

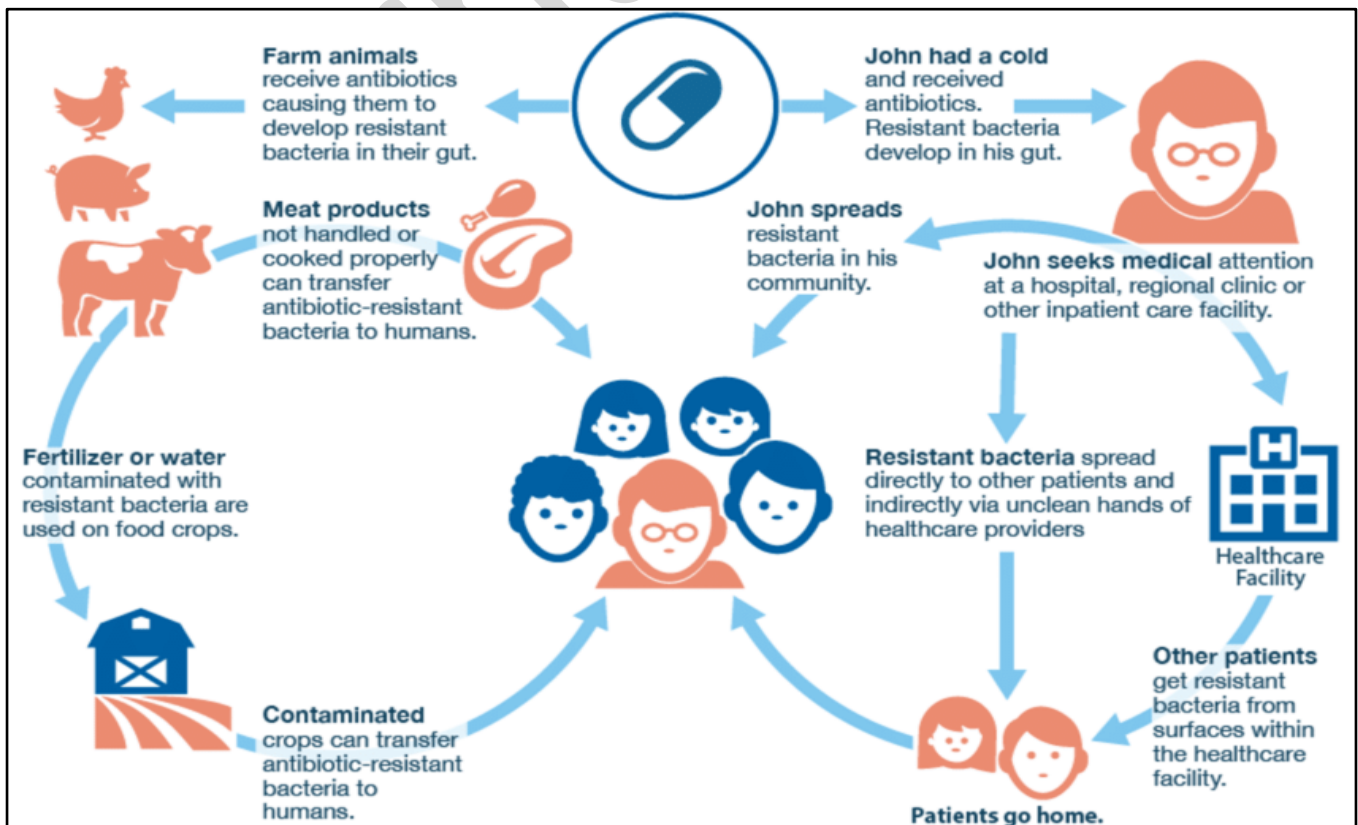
- Around 25% of the global cases of TB are in India and there is a 5-18 percent death rate in drug resistance.
- Mylab and Serum Institute of India (SII) have come together to create a unique Cy-Tb solution which is Fast, Accurate, and Cost Effective.
- The Drug Controller General of India has granted market authorisation to SII's Cy-TB kit which can be used as skin test for diagnosis of latent tuberculosis.

10.15 Global Antimicrobial Resistance and Use Surveillance System (GLASS) report-2022

In news- World Health Organization (WHO) has released the GLASS report-2022 recently.

What does the report say?

- **For the first time, the GLASS report provided analyses for antimicrobial resistance (AMR) rates** in the context of national testing coverage, AMR trends since 2017, and data on antimicrobial consumption in humans in 27 countries.
- Within six years, GLASS achieved participation from 127 countries with 72% of the world's population.
- The report includes an innovative interactive digital format to facilitate data extraction and graphics.
- **The report shows high levels (above 50%) of resistance were reported in bacteria frequently causing bloodstream infections in hospitals, such as *Klebsiella pneumoniae* and *Acinetobacter spp.***
- These life-threatening infections require treatment with last-resort antibiotics, such as carbapenems.
- However, **8% of bloodstream infections caused by *Klebsiella pneumoniae*** were reported as resistant to carbapenems, increasing the risk of death due to unmanageable infections.
- **Over 60 per cent of *Neisseria gonorrhoea* infections, a common sexually transmitted disease, show resistance to ciprofloxacin, one of the most widely used oral antibacterials.**
- And over **20 percent of *E.coli* isolates, the most common pathogen in urinary tract infections, were resistant to ampicillin and co-trimoxazole, first-line drugs, as well as second-line treatments known as fluoroquinolones.**
- Although most antimicrobial resistance trends have remained stable over the past four years, bloodstream infections due to resistant *E.coli*, *Salmonella* and *gonorrhoea* infections, have jumped by at least 15 per cent compared to 2017 rates



Antimicrobial resistance occurs when microbes evolve mechanisms that protect them from the effects of antimicrobials. All classes of microbes can evolve resistance. Fungi evolve antifungal resistance. Viruses evolve antiviral resistance.

10.16 L1 frequency for NavIC

In news- To promote the use of NavIC, the Indian version of GPS, the ISRO will introduce the L1 frequency in all its future satellites.

The L1 frequency for NavIC-

- As per ministry of Science and Technology, the next satellites, starting from NVS-01 onwards, will have an L1 band for civilian navigational use.
- The seven satellites in the NavIC constellation so far use two frequencies for providing positioning data — the L5 and S bands.
- The new satellites NVS-01 onwards, meant to replace these satellites, will also have L1 frequency.
- L1 sends a navigation message at **1575.42 MHz**, the coarse acquisition C/A code (which is open to the public), and an encrypted precision (P) code known as the P(Y) code (restricted access).
- The **L1 is the oldest and most established GPS signals**, which even the less sophisticated, civilian-use devices such as smartwatches are capable of receiving.

About 'NAVigation with the Indian Constellation' (NavIC)-

- NavIC is India's homegrown alternative to GPS.
- Developed by ISRO, the navigation satellite system was first approved in 2006 at a cost of \$174 million, but **became operational only by 2018**.
- At present, it consists of eight satellites, covering the whole of India and up to 1,500 km from its boundaries.
- NavIC is mainly used in public vehicle tracking, to provide emergency warning alerts to fishermen venturing into the deep sea, and for tracking data related to natural disasters.
- Apart from the US-owned GPS, the other prominent navigation systems are **Galileo from the European Union, Russia-owned GLONASS and China's Beidou**.
- QZSS, operated by Japan, is another regional navigation system covering the Asia-Oceania region.

10.17 Carboplatin drug to treat Breast Cancer

In news- The results of the study by the Tata Memorial Centre show that a commonly available and inexpensive drug, carboplatin, increased the cure rate and survival of a very aggressive type of breast cancer, called triple-negative breast cancer (TNBC).

Key highlights of the study-

- The results of the landmark 'TMC Study - Platinum in TNBC' were presented at the San Antonio Breast Cancer Symposium, which is the largest and most important breast cancer conference in the world.
- The study enrolled women with stage II-III triple negative breast cancer from 2010 to 2020 who were divided into two groups, both of whom received chemotherapy to downstage the disease prior to surgery.
- A commonly available and inexpensive treatment like carboplatin will now be routinely offered as part of pre-operative chemotherapy regimen to women with TNBC.
- Given that TNBC constitutes about 30% of breast cancer in India and about 45% of breast cancer in women younger than 50 years, the implications of this result are very important.
- Until the results of this study there was no conclusive evidence that this drug should be routinely used as part of the treatment of this disease.

What is triple-negative breast cancer (TNBC)?

- It is a kind of breast cancer that does not have any of the receptors that are commonly found in breast cancer.
- The term triple-negative breast cancer refers to the fact that the cancer cells don't have estrogen or progesterone receptors (ER or PR) and also don't make any or too much of the protein called HER2. (The cells test "negative" on all 3 tests.)
- TNBC differs from other types of invasive breast cancer in that it tends to grow and spread faster, has fewer treatment options, and tends to have a worse outcome.
- Breast cancer is the commonest cancer affecting women not only in India but globally.

Inclusion of Yoga in the treatment of breast cancer patients-

- As per a study by the Tata Memorial Hospital, inclusion of Yoga in the treatment of breast cancer patients is highly beneficial.
- The inclusion of Yoga resulted in a 15% relative improvement in disease free survival (DFS) and 14% in overall survival (OS).
- The yoga protocol included gentle and restorative yoga postures(asana) with regular periods of relaxation and pranayama.
- The largest clinical trial is an important milestone in the **use of YOGA in breast cancer since this is the first example of a very Indian traditional remedy** being tested in a rigorous western design of randomized study with robust sample size.

10.18 Base genetic editing

In news- A 13 year old patient named Alyssa became the first person in the world to benefit from base editing, the experimental cancer treatment.

Blood cancer-

- Alyssa was diagnosed with a kind of **blood cancer known as T-cell acute lymphoblastic leukaemia (T-ALL)**.
- **T-ALL affects the stem cells in the bone marrow** that produce a particular kind of white blood cells (WBC) called T lymphocytes (T cells).
- These cells provide a person immunity by killing cells carrying infections, activating other immune cells, and regulating the immune response.
- At least 20% of these WBC are atypical– as they accumulate in the bone marrow, they crowd out “good” WBCs and hence weaken the immune system.
- These unhealthy cells can also accumulate in other parts of the body like the liver, spleen and lymph nodes.
- **While found in both children and adults, T-ALL's incidence decreases with age.**

How is T-ALL typically treated?

- Typical treatment for T-ALL is similar to that of any leukaemia– chemotherapy and stem cell/bone marrow transplant.
- Doctors will first administer multiple rounds of chemotherapy. This either kills the cancerous cells or stops them from further dividing. The exact schedule is guided by an individual's age and general health.
- If this fails, and the individual is suitable, doctors will conduct bone marrow transplant.
- First the patient will undergo radiation therapy and/or chemotherapy that will kill the cancerous cells but also wreck an individual's immunity system along with it.
- Thus, patients receive an infusion of healthy bone marrow cells that will hopefully multiply and restore immunity.
- Overall treatment for T-ALL is pretty effective– children have a survival rate of over 85 per cent after five years of receiving this treatment.

The Experimental treatment received by Alyssa-

- Alyssa, from Leicester in UK, began a trial where she received a dose of healthy T-cells from a donor that would hopefully attack her cancerous cells without destroying each other.
- Known as CAR-T therapy, this principle has been around for a while, but Alyssa's case was different.
- **Traditionally, CAR-T therapy involves adding a gene to T-cells that causes them to seek out and destroy cancerous cells** and the modified cells are known as CAR-T cells.
- First, an individual's own T-cells are removed, which are then modified and reintroduced to the individual.
- The problem with such an approach (besides the expense) is that very often, when an individual is really sick, it is simply impossible to obtain enough healthy T-cells to create CAR-T cells.
- While donors can provide healthy T-cells to an individual, these T-cells from a foreign body are going to attack every single cell in that patient's body, making the treatment counterproductive.
- Thus, **scientists have resorted to what is known as base editing— through this technique of genetic editing, they make it possible for one donor to supply T-cells to multiple recipients**, without the traditional risks associated with it.
- Thus, Alyssa received genetically **modified cells that were programmed to specifically attack her cancer** while leaving the rest of her body alone.

What is base editing?

- **The billions of bases in our DNA spell** out the instruction manual for our body.
- **With advances in genetic technology, scientists have been able to zoom into a precise part of the genetic code to alter the molecular structure of just one base**, effectively changing its genetic instructions.
- A team at the Great Ormond Street Hospital managed to use base-editing to create a new type of T-cell from a healthy donor that would not attack other cells in Alyssa's body, not kill each other, survive chemotherapy and finally, hunt down all other T-cells in Alyssa's body (healthy and cancerous).
- After this therapy worked in its initial stages, Alyssa was given another bone marrow transplant to restore her immunity.
- As of today, Alyssa is 6 months into remission. While doctors are still monitoring her and will do so for the foreseeable future, currently the cancer cells have disappeared with no signs of reappearing just yet.
- Currently, three more trials that use this technique are underway.

10.19 US announces Fusion energy breakthrough

In news- Scientists in the United States have, for the first time, achieved a net gain in energy from a nuclear fusion reaction.

What is fusion nuclear energy?

- Nuclear fusion is the process by which two light atomic nuclei combine to form a single heavier one while releasing massive amounts of energy.
- Fusion reactions take place in a state of matter called plasma — a hot, charged gas made of positive ions and free-moving electrons with unique properties distinct from solids, liquids or gases.
- The sun, along with all other stars, is powered by this reaction.
- To fuse in our sun, nuclei need to collide with each other at extremely high temperatures, around ten million degrees Celsius.
- The high temperature provides them with enough energy to overcome their mutual electrical repulsion.
- Once the nuclei come within a very close range of each other, the attractive nuclear force between them will outweigh the electrical repulsion and allow them to fuse.
- For this to happen, the nuclei must be confined within a small space to increase the chances of collision.
- In the sun, the extreme pressure produced by its immense gravity creates the conditions for fusion.
- Fusion is a different, but more powerful, way of harnessing the immense energy trapped in the nucleus of an atom. This is the process that makes the Sun and all other stars shine and radiate energy.

- Attempts to master the fusion process have been going on at least since the 1950s, but it is incredibly difficult and is still at an experimental stage.

Fusion still far from reality-

- By all estimates, use of the fusion process for generating electricity at a commercial scale is still two to three decades away.
- **There are at least two different ways in which fusion reactions are being experimented with.**
- These differ mainly in the way the input energy is supplied to create the extreme heat to enable fusion, but that also results in differences in design and capabilities.
- At the Lawrence Livermore facility, scientists use high-energy laser beams to achieve those temperatures, also called **'inertial fusion'**.
- At some other places, including the international collaborative project in southern France called ITER in which India is a partner, very **strong magnetic fields are used for the same purpose.**
- **ITER is an international nuclear fusion research and engineering megaproject aimed at creating energy by replicating, on Earth, the fusion processes of the Sun.**
- It is expected to demonstrate the viability of a commercially scalable nuclear fusion reactor between 2035 and 2040.
- **ITER, when operational, would become the biggest machine anywhere in the world,** more complex than the Large Hadron Collider at CERN, or the LIGO project to detect gravitational waves.
- Right now, the ITER reactor is in the machine assembly phase.
- **India joined the ITER project in 2005** and the Institute for Plasma Research in Ahmedabad, a laboratory under the Department of Atomic Energy, is the lead institution from the Indian side participating in the project.
- As a member country, India is building several components of the ITER reactor, while also carrying out a number of experiments and R&D activities related to the project.

Fusion VS Fission technology-

- **The nuclear energy currently in use across the world comes from the fission process,** in which the nucleus of a heavier element is split into those of lighter elements in a controlled manner.
- A large amount of energy is released in both these processes, but substantially more in fusion than fission.
- Besides greater energy yield, **fusion is also a carbon-free source of energy, and has negligible radiation risks.**
- But fusion reactions happen only at very high temperatures, 10 times the temperature that exists at the core of the Sun, and creating such an extreme environment in a laboratory requires huge amounts of energy.
- So far, the energy released in such experimental fusion reactions have been lower than what is consumed to create the enabling high temperatures.

10.20 Forabot

In news- Recently, researchers at North Carolina State University, USA have developed and demonstrated a robot capable of sorting, manipulating and identifying microscopic marine fossils.

About the robot-

- Such microscopic marine fossils are key to understanding the world's oceans and climate of today and in the prehistoric past.
- The team of engineering and paleoceanography experts developed the robot, called Forabot, to automate the sorting of forams.
- **Forabot has an accuracy rate of 79 per cent for identifying forams,** which is better than most trained humans.

- **Currently, Forabot is capable of identifying six different types of foram** and processing 27 forams per hour.
- **The robot's AI uses images to identify the type of foram and sorts it accordingly.**

Note:

- **Foraminifera, also called forams, are very simple micro-organisms** that secrete a tiny shell, a little longer than a millimetre.
- The organisms have existed in our oceans for more than 100 million years.
- When forams die, they leave behind their shells.
- Examining their shells give scientists insights into the characteristics of the oceans from a time when the forams were alive.
- Different types of foram species thrive in different ocean environments and chemical measurements can tell scientists everything from the ocean's chemistry to its temperature when the shell was being formed.

10.21 The Patriot missile

In news- US is sending a Patriot missile battery to Ukraine.

What is the Patriot missile?

- **The MIM-104 Patriot (Phased Array Tracking Radar to Intercept On Target)** missile system is the United States Army's main air and missile defence system.
- **It started out as an anti-aircraft system**, but over the years, newer variants are capable of engaging ballistic and cruise missiles, loitering munitions, and aircraft.
- The entire system includes a phased array radar, a control station, computers and generators.
- Manufactured by the US defence contractor Raytheon, the Patriot is in service with the US and allied countries including Germany, Greece, Israel, Japan, Kuwait, the Netherlands, Saudi Arabia, South Korea, Poland, Sweden, Qatar, the United Arab Emirates, Romania, Spain, and Taiwan.
- The Patriot is a **surface-to-air guided missile system** that was first deployed in the 1980s and **can target aircraft, cruise missiles and shorter-range ballistic missiles.**
- **Each Patriot battery consists of a truck-mounted launching system** with eight launchers that can hold up to four missile interceptors each, a ground radar, a control station and a generator.
- Over the years the Patriot system and missiles have been continually modified. **The current interceptor missile for the Patriot system costs approximately \$4 million per round** and the launchers cost about \$10 million each.
- **A Patriot battery can need as many as 90 troops to operate and maintain it.**
- The Patriot battery has a long firing range, but can cover only a limited broad area and it has a **more powerful radar that is better at discriminating targets.**

10.22 Japanese firm's lunar lander on way to the moon

In news- Japanese company Ispace has recently launched a lander named M1 under its HAKUTO-R mission with the help of Falcon 9 rocket of SpaceX.

About the mission-

- The payloads on M1 include a rover from the United Arab Emirates and a small two-wheeled Transformers-like robot for the Japanese space agency.
- This will be the first privately-led Japanese mission to land on the lunar surface.
- **The Ispace Company started as one of the competitors for the Google Lunar X Prize**, a competition that offered a \$20 million prize for the first private spacecraft to land on the moon, travel 500 meters and send back video from the lunar surface.

- At the time, the Japanese group, known as Team Hakuto, focused on developing a rover, and it was to rely on a competing team from India for the ride to the surface of the moon.
- The group known as Team Hakuto evolved into Ispace, attracting sizable investment, and the company plans to launch a series of commercial moon landers in the coming years.
- The Japanese company's lander is not the only passenger on the flight. A secondary payload on the Falcon 9 is a small NASA mission, Lunar Flashlight, which is to enter an elliptical orbit around the moon and use an infrared laser to probe the deep, dark craters at the moon's Polar Regions.
- Much like some other recent moon missions, **M1 is taking a circuitous, energy-efficient trip to the moon** and will not land, in the Atlas Crater in the Northern Hemisphere of the moon, until late April. The fuel-efficient trajectory allows the mission to pack in more payloads and carry less fuel.

Moon's other recent visitors

- As part of the Artemis I mission, NASA's Orion spacecraft travelled to, then orbited the moon. It returned to Earth recently, with a splashdown into the Pacific Ocean.
- A small NASA-financed mission called CAPSTONE also arrived recently to explore an orbit in which NASA plans to build a lunar outpost where astronauts will stop on the way to the moon.
- And while it hasn't arrived yet, the moon will get a third new visitor in January 2023. Danuri, a South Korean space probe, was launched in August 2022 and is due to enter lunar orbit Dec. 16.

Are other companies attempting what Ispace is doing?

- A NASA program called Commercial Lunar Payload Services, or CLPS, has been looking to send experiments to the surface of the moon.
- The first two missions, from Intuitive Machines of Houston and Astrobotic Technology of Pittsburgh, plan to launch next year after considerable delays.
- Intuitive Machines' lander, which could be launched as early as March, could even beat Ispace to the moon because it's using a quick six-day trajectory.

10.23 First global survey of Earth's surface waters by SWOT

In news- NASA is planning to conduct the first survey of global water such as oceans, lakes and rivers from space.

About the SWOT-

- Dubbed SWOT, short for Surface Water and Ocean Topography, the advanced radar satellite is designed to give scientists an unprecedented view of the life-giving fluid covering 70% of the planet, shedding new light on the mechanics and consequences of climate change.
- A Falcon 9 rocket, owned and operated by billionaire Elon Musk's commercial launch company SpaceX is to carry SWOT into orbit.
- Nearly 20 years in development, SWOT incorporates advanced microwave radar technology that scientists say will collect height-surface measurements of oceans, lakes, reservoirs and rivers in high-definition detail over 90% of the globe.
- The data, compiled from radar sweeps of the planet at least twice every 21 days, will enhance ocean-circulation models, bolster weather and climate forecasts and aid in managing scarce freshwater supplies in drought-stricken regions, according to researchers.
- The satellite was designed and built at NASA's Jet Propulsion Laboratory (JPL) near Los Angeles.
- Developed by the U.S. space agency in collaboration with its counterparts in France and Canada, SWOT was one of 15 missions listed by the National Research Council as projects NASA should undertake in the coming decade.
- One major thrust of the mission is to explore how oceans absorb atmospheric heat and carbon dioxide in a natural process that moderates global temperatures and climate change.
- SWOT can do so with 10 times greater resolution than existing technologies.

- SWOT's three-year mission will enable researchers to better trace fluctuations in the planet's rivers and lakes during seasonal changes and major weather events.
- SWOT's radar instrument operates at the so-called Ka-band frequency of the microwave spectrum, allowing scans to penetrate cloud cover and darkness over wide swaths of the Earth.

10.24 ICRISAT intern developed Bio-insecticide

In news- A 17-year-old research intern at the **International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)** bagged the third prize at the **International Science and Engineering Fair** in the United States — the world's largest pre-college science fair.

About Bio-insecticide-

- It is a cost-effective bio-insecticide from the leaves of bullock's heart tree (*Annona reticulata*), popularly known as *ramphal*.
- Extracts from different parts of this plant have traditionally been used to cure conditions including *dysentery* and *pediculosis* (louse infestation).
- **Extracts from its leaves may be useful against three destructive pests — Pod borer, Green peach aphid and fall armyworm** — with a mortality rate of 78-88 per cent.
- All these pests are known for incurring crop losses to farmers.
- This makes it a cost-effective pesticide for smallholder farmers and provides an additional source of revenue through the sale of fruits for human consumption and the leaves for bio-pesticide extracts.

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)-

- ICRISAT is an international organization which conducts agricultural research for rural development, **headquartered in Patancheru (near Hyderabad)** with several regional centers.
- It was founded in 1972 by a consortium of organisations convened by the Ford and the Rockefeller foundations.
- Its charter was signed by the FAO and the UNDP.
- Since its inception, host country India has granted a special status to ICRISAT as a UN Organization operating in the Indian Territory making it eligible for special immunities and tax privileges.

10.25 InSight Lander to sign off soon

In news- In a recent tweet, NASA's InSight Mars lander account said that the robot currently on Mars will be signing off soon, ending its nearly four-year-long journey to study the red planet's early evolution.

About InSight Mars lander-

- The Interior Exploration using Seismic Investigations, Geodesy and Heat Transport mission was a robotic lander designed to study the deep interior of the planet Mars.
- It was manufactured by Lockheed Martin Space Systems, was managed by NASA's Jet Propulsion Laboratory (JPL), and most of its scientific instruments were built by European agencies.
- The mission was launched on 5 May 2018 aboard an Atlas V-401 launch vehicle and successfully landed at Elysium Planitia on Mars on 26 November 2018.
- The lander had two main functions-
 - The first was **to understand how rocky planets formed and evolved**, and study the interior structure and geological processes of Mars through its various layers, such as the core, the mantle and the crust.
 - **Second, InSight was to figure out just how tectonically active Mars is today**, and how often meteorites impact it. This included measuring marsquakes, and more than 1,300 quakes have been detected.

- InSight's objectives were to place a seismometer, called Seismic Experiment for Interior Structure (SEIS), on the surface of Mars to measure seismic activity and provide accurate 3D models of the planet's interior; and measure internal heat transfer using a heat probe called HP³ to study Mars' early geological evolution.
- This intended to give a new understanding of how the Solar System's terrestrial planets – Mercury, Venus, Earth, Mars – and Earth's Moon form and evolve.

Why is InSight shutting down?

- When InSight landed on Mars in 2018, its solar panels produced around 5,000 watt-hours on each Martian day. Each Martian day is 40 minutes longer than a day on earth. Now, they're producing roughly 500 watt-hours.
- The reduced power is because the panels' capacity to receive energy naturally reduces over time. There will be more dust in the air that would accumulate on the panels and therefore reduce the sunlight received and the lander's source of energy.
- NASA announced in May, 2022 that the team would soon put the lander's robotic arm in its resting position (called the "retirement pose").

10.26 Joint Exercise Agni Warrior

- The 12th Edition of Exercise Agni Warrior, a bilateral exercise between the Singapore & Indian Army concluded at Field Firing Ranges, Devlali (Maharashtra).
- Exercise Agni Warrior, involved showcasing joint firepower planning, execution and use of New Generation Equipment by the Artillery arm of both armies.
- Exercise also included participation by both sides in a joint computer war-game as part of joint planning process.
- Indigenously manufactured Artillery guns and howitzers also participated during the final phase of the exercise.

10.27 Technotex 2023

- India's premier show on Technical Textiles - 'Technotex 2023' will be held in Mumbai from 22nd to 24th February 2023.
- The **largest technical textile industry** in India is focused on providing its attendees access and networking opportunities to meet top CEOs, manufacturers, industry peers, purchase managers and suppliers from India and around the globe.
- The event is being **organized by the Ministry of Textiles, Government of India in collaboration with Federation of Indian Chambers of Commerce Industry, under National Technical Textiles Mission (NTTM).**

10.28 Longest Double Decker Viaduct

- Nagpur Metro in Maharashtra has entered Guinness Book of World Records for creating the longest double-decker viaduct metro measuring 3.14 km on Wardha Road **with Highway Flyover & Metro Rail Supported on single column.**
- It was constructed by team NHAI and Maha Metro have achieved the Guinness Book of World Record for constructing the **longest Double Decker Viaduct (3.14 KM) in Nagpur, Maharashtra.**
- The double-decker viaduct has already been certified as the longest structure in Asia and India by Asia Book of Records and India Book of Records respectively.

10.29 SHE STEM

- As part of the **Sweden India Nobel Memorial Week**, SHE STEM, the annual event to celebrate women in the fields of science, technology, engineering, mathematics, and sustainability, was successfully held for the third year in a row.
- The annual event is organised by the Embassy of Sweden in India in partnership with the Atal Innovation Mission, NITI Aayog, Government of India and the German Centre of Innovation and Research (DWIH New Delhi).

10.30 Rooftop Solar Programme

- The Ministry of New and Renewable Energy has extended the Rooftop Solar Programme till 31.03.2026.
- The subsidy under the programme will be available until the target under the Programme is achieved.
- The CFA/subsidy is being provided to residential consumers for installation of rooftop solar.
- To ease out the implementation of the Programme, a National Portal was developed which was launched by Hon'ble Prime Minister in July 2022.

What is a Grid Connected Rooftop Solar PV System?

In grid connected rooftop or small solar photovoltaic (SPV) systems, the DC power generated from a solar panel is converted to AC power using a power conditioning unit/Inverter and is fed to the grid.

10.31 Dark patterns on the Internet

In news- Some Internet-based firms have been tricking users into agreeing to certain conditions or clicking a few links. These are examples of “dark patterns,” also known as “deceptive patterns.”

What are dark patterns?

- Such patterns are unethical user interface designs that deliberately make your Internet experience harder or even exploit you. In turn, they benefit the company or platform employing the designs.
- **By using dark patterns, digital platforms take away a user's right to full information** about the services they are using, and reduce their control over their browsing experience.
- **The term is credited to UI/UX (user interface/user experience) researcher and designer Harry Brignull**, who has been working to catalogue such patterns and the companies using them since around 2010.
- **Social media companies and Big Tech firms** such as Apple, Amazon, Skype, Facebook, LinkedIn, Microsoft, and Google use dark or deceptive patterns to downgrade the user experience to their advantage.
- Amazon came under fire in the EU for its confusing, multi-step cancellation process for the Amazon Prime subscription.
- In social media, LinkedIn users often receive unsolicited, sponsored messages from influencers. Disabling this option is a difficult process with multiple steps that requires users to be familiar with the platform controls.
- **As Meta-owned Instagram pivots to video-based content to compete against TikTok, users have complained that they are being shown suggested posts they did not wish to see** and that they were unable to permanently set preferences.
- **Another dark pattern on the application is sponsored video ads** getting scattered between reels and stories that users originally opted to view, tricking them for several seconds before they can see the small “sponsored” label.

- **Google-owned YouTube nudges users to sign up for YouTube Premium with pop-ups**, obscuring the final seconds of a video with thumbnails of other videos — a way of disrupting what should have been an otherwise smooth user experience.

Impact of dark patterns on users-

- Dark patterns endanger the experience of Internet users and make them more vulnerable to financial and data exploitation by Big Tech firms.
- Dark patterns confuse users, introduce online obstacles, make simple tasks time-consuming, have users sign up for unwanted services/products, and force them to pay more money or share more personal information than they intended.
- Make cancellation buttons hard to see or click, making ads appear as news reports or celebrity endorsements, auto-playing videos, forcing users to create accounts to finish a transaction, silently charging credit cards after free trials end, and using dull colours to hide information that users should know about.

10.32 Naegleria fowleri or Brain-eating amoeba

In news- South Korea has recently reported its first case of infection from *Naegleria fowleri* or “brain-eating amoeba”.

About brain-eating amoeba-

- *Naegleria* is an amoeba, a single-celled organism, and only one of its species, called *Naegleria fowleri*, can infect humans.
- It was first discovered in Australia in 1965 and is commonly found in warm freshwater bodies, such as hot springs, rivers and lakes.
- The amoeba enters the human body through the nose and then travels up to the brain.
- This can usually happen when someone goes for a swim, or dive or even when they dip their head in a freshwater body.
- In some cases, it was found that people got infected when they cleaned their nostrils with contaminated water.
- Scientists haven't found any evidence of the spreading of *Naegleria fowleri* through water vapour or aerosol droplets.
- Once it goes to the brain, it destroys brain tissues and causes a dangerous infection known as primary amebic meningoencephalitis (PAM).
- So far, *Naegleria fowleri* has been found in all continents and declared as the cause of PAM in over 16 countries, including India.

What are the symptoms of PAM?

- The first signs of PAM start showing within one to 12 days after the infection.
- In the initial stages, they might be similar to symptoms of meningitis, which are headache, nausea and fever.
- In the later stages, one can suffer from a stiff neck, seizures, hallucinations, and even coma.
- The infection spreads rapidly and on average causes death within about five days.
- The fatality of PAM is as such that only four people have survived out of 154 known infected individuals in the United States from 1962 to 2021.

The treatment for the infection-

- As the *Naegleria fowleri* infection is rare and progresses quickly, scientists haven't been able to identify any effective treatments yet.

- At present, doctors treat it with a combination of drugs, including amphotericin B, azithromycin, fluconazole, rifampin, miltefosine, and dexamethasone.

Climate change impact on the spread of the infection-

- According to the US Centers for Disease Control and Prevention (CDC), with the rising global temperatures, the chances of getting *Naegleria fowleri* infection will go up as the amoeba mainly thrives in warm freshwater bodies.
- The organism best grows in high temperatures up to 46°C and sometimes can survive at even higher temperatures.
- Various recent studies have found that excess atmospheric carbon dioxide has led to an increase in the temperature of lakes and rivers that provide a more favourable environment for the amoeba to grow.
- Heat waves, when air and water temperatures may be higher than usual, may also allow the amoeba to thrive.

10.33 Bimetallic highly potent antitumor agent

In news- A newly found bimetallic highly potent antitumor agent that inhibits new blood vessel development (antiangiogenic) can help treat cancer cases that become resistant to platinum drugs commonly used for tackling the disease.

About newly found bimetallic-

- **Platinum drugs are the frontline treatment option for many cancers.** But their broad applicability is severely limited due to the fast development of resistance against these drugs.
- **Several platinum-based anticancer drugs, including cisplatin, carboplatin, oxaliplatin, nedaplatin, and lobaplatin, are the frontline treatment options for various cancers.**
- Unfortunately, the **acquired or intrinsic resistance significantly limits the uses of platinum-based treatment.**
- Scientists from Agharkar Research Institute (ARI), Pune, an autonomous institute of the Department of Science and Technology, have discovered a Ruthenium–Ferrocene Bimetallic agent that shows a highly potent antitumor effect in platinum-resistant cancers.
- **The new agent is the first rationally designed Ruthenium-Ferrocene bimetallic complex identified to date that possesses low toxicity** but both potent antitumor as well as anti-angiogenic properties.
- **The complex can inhibit primary tumor growth and metastasis as well as kill cancer cells efficiently.**
- They showed that Ru-Fc (Ruthenium–Ferrocene) hybrid binds to nucleophilic biomolecules and produces reactive oxygen species, which causes mitochondrial dysfunction and induces stress on the Endoplasmic Reticulum (ER) of cells, leading to poly (ADP–ribose) polymerase-mediated cell death.

11. SOCIETY

11.1 The Tribal Development Report 2022

In news- A first-of-its-kind (since 1947) Tribal Development Report-2022 was released recently.

About the report-

- The report **looks at the status of tribal communities at an all-India level** and in central India **with respect to livelihoods, agriculture, natural resources**, economy, migration, governance, human development, gender, health, education, art, and culture.
- It was **released by the Bharat Rural Livelihoods Foundation, an independent society set up under the Ministry of Rural Development.**

- **The first volume of the report**, published by Routledge and CRC Press, combines data from government sources, case studies, archival research, and interviews on crucial dimensions of tribal lives and livelihoods.
- **It provides a broad overview of the contemporary macroeconomic situation of tribal communities**, with a focus on the challenges of agriculture, land, energy, and water use, especially groundwater management; and highlights the need to move into a new paradigm of agroecology-based, nature-positive farming and sustainable water use driven by local institutions.
- **The volume also looks at the neglect faced by tribal areas in developing infrastructure**, from irrigation to energy; shares insights on the invisibility of tribal voices in policy processes; and discusses tribal communities in the informal sector and in migration.
- **The second volume of the report, on the other hand, focuses on human development and governance.**
- **It discusses challenges faced by tribal communities** by focusing on the status of health, education, and nutrition; explores issues related to gender and development and the impact of the loss of traditional rights over land and forest resources; and also presents a progress report on the implementation of **Panchayat (Extension to Scheduled Areas) Act (or PESA), 1996, and the Forest Rights Act (FRA).**
- **It also looks at the state of Denotified Tribes in the country** and presents an overview and remedial policy actions for upholding tribal arts, crafts, language and literature, and knowledge systems.

What does the report say?

- India's tribal communities form 8.6 percent of the country's population according to the 2011 Census but they are at the bottom of the country's development pyramid even after 75 years of independence.
- The report stated that indigenous communities of India have been pushed farther away from alluvial plains and fertile river basins into the harshest ecological regions of the country like hills, forests, and drylands.
- Of the 257 Scheduled Tribe districts, 230 (90 per cent) are either forested or hilly or dry but they account for 80 per cent of India's tribal population.
- Adivasi sub-districts belong to a larger contiguous backward region or Adivasi belt, which goes beyond the frozen administrative categories of state, district and sub-district.
- During British colonial rule, the bond between Adivasis and their relation of symbiosis with their immediate environment was ruptured.
- It was in the National Forest Policy of 1988 that domestic requirements of local people were explicitly recognised for the very first time.
- The Policy emphasized safeguarding their customary rights and closely associating Adivasis in the protection of forests.

Note: The BRLF was set up by the Union Cabinet September 3, 2013 as an independent society under the Union Ministry of Rural Development to scale up civil society action in partnership with central and state governments.

11.2 Social Hostilities Index (SHI)

In news- The US think-tank Pew Research Center has published the SHI recently.

Key findings of the index-

- The SHI measures acts of religious hostility by private individuals, organizations or groups.
- The index comprises 13 metrics, including religion-related armed conflict or terrorism and mob or sectarian violence.
- According to the report, among the most populous countries, India, Nigeria, Pakistan, Egypt and Bangladesh had "very high" social hostilities involving religion.
- As per the index India was among a handful of countries that saw religious hostilities in the early stages of the covid-19 pandemic in 2020.
- Overall, the country had the highest rate of social tensions along religious lines globally in 2020, the report showed.

- At 9.4 out of a maximum possible score of 10, India's Social Hostilities Index (SHI) in 2020 was worse than neighbouring Pakistan and Afghanistan, and a further increase in its own index value for 2019. A higher score is worse. The report covered 198 countries.
- India fared much better on a second index: the Government Restrictions Index (GRI). This index looks at laws, policies and state actions restricting religious beliefs and practices.
- China ranked the worst in GRI, with a score of 9.3. India's 34th rank was enough to categorize it among countries with "high" levels of such government restrictions.
- The GRI comprises 20 measures, including efforts by governments to ban particular faiths, prohibit conversion, limit preaching or give preferential treatment to one or more religious groups.
- The report also looked at the impact of the covid-19 pandemic on religious persecution in 2020.
- India was one of just four countries in the world that saw pandemic-related social hostilities against religious groups involving physical violence or vandalism by private individuals or organizations. Argentina, Italy and the US were the others.
- It said that India was also among the countries in which private individuals or organizations linked the spread of the coronavirus to religious groups.

India fared the worst on religion-based social hostilities in 2020

Countries with highest Social Hostilities Index (SHI), 2020
(lower score = better)



This index measures acts of religious hostility by private individuals/groups/organizations, and comprises 13 measures, including religion-related armed conflict, mob violence, harassment over attire for religious reasons and other forms of religion-related intimidation or abuse.

Source: Pew Research Center

mint

Official Data-

- By India's own official crime statistics, the picture is more mixed.
- **According to police data, religious riots for which cases were filed rose substantially in 2020, and declined again in 2021.**
- But there have been significant variations over time, and the numbers are too low as a share of overall rioting incidents to indicate a definitive trend.
- Moreover, the home ministry no longer provides data on "communal incidents", and the National Crime Records Bureau (NCRB) now only publishes data on religious "riots".
- Even within available data, there are large gaps between the data provided by the NCRB and the home ministry.

12. SPORTS

12.1 New chief of the Indian Olympic Association (IOA)

In news- Former Indian athlete **PT Usha** became the new chief of the Indian Olympic Association (IOA) recently, as well as its first woman president.

About Indian Olympic Association (IOA)-

- The Indian Olympic Association or Indian Olympic Committee is the **body responsible for selecting athletes to represent India at the Olympic Games, Asian Games** and other international athletic meets and for managing the Indian teams at these events.
- It plays under the name of Team India.
- **Related to India's participation in the 1920 and 1924 Olympics**, Sir Dorabji Tata had suggested the need for a Sports body at National level for promoting Olympic Sport in united India.
- After the 1920 Games, the Committee sending the team to these Games met, and, on the advice of Sir Dorabji Tata, invited Dr. A.G. Noehren (Physical Education Director of YMCA India) to also join them.
- Subsequently, in 1923-24, a provisional All India Olympic Committee was set-up, which organised the All India Olympic Games (that later became the National Games of India) in February 1924.
- Eight athletes from these Games were selected to represent India at the 1924 Paris Summer Olympics, accompanied by manager Harry Crowe Buck.
- **In 1927, the Indian Olympic Association (IOA) was formed, with Sir Dorabji Tata as its founding President and Dr. A.G. Noehren as Secretary.**
- The same year the IOA was officially recognised by the International Olympic Committee.

About PT Usha-

- Pilavullakandi Thekkeraparambil Usha is a retired Indian track and field athlete, born in Kuthali, Kozhikode, Kerala.
- She has been associated with Indian athletics since 1979.
- She has won 4 Asian gold medals and 7 Silver medals.
- She is often called the "Queen of Indian track and field".
- On 6 July 2022, she was nominated to the Rajya Sabha by former President Ram Nath Kovind.
- With her appointment as chief of IOA, she also became the **first Olympian and first international medallist** to head the IOA in its 95-year-old history.
- Usha is the first sportsperson to have represented the country and also become IOA chief since Maharaja Yadavindra Singh, who played a Test match in 1934 and was the third IOA president who held office from 1938 to 1960.

12.2 FIFA Awards 2022

In news- FIFA world cup has been concluded with Argentina winning the final and a host of individual awards being given to players.

What are Fifa World Cup awards?

Following are individual FIFA awards:

The Golden Boot award-

- The **major criteria for this award are the most goals scored by a player in a World Cup**, with a secondary tiebreaker of the player with the most assists receiving the trophy in the case of a tie, followed by minutes played.

- **Mbappe (France)** and Messi were tied on five goals going into the final, but Mbappe scored 8 goals to finish the Qatar World Cup as the tournament's top scorer.
- Mbappe is the second player to score a hat-trick in a World Cup final after England's Geoff Hurst (1966 vs Germany).
- Silver Boot (Second highest goal-scorer) - Lionel Messi (7 goals).
- Bronze Boot (Third highest goal-scorer) - Olivier Giroud & Julian Alvarez (4 goals each).

The Golden Ball Award (For best player of the tournament)-

- This award is determined by a FIFA committee shortlist of players, with the winners chosen by FIFA-accredited journalists at the event.
- Messi, who has smashed 26 goals for Argentina in major international tournaments, is the only player to win the Golden Ball twice (2014 and 2022).
- Silver Ball (For second best player of the tournament) - Kylian Mbappe (8 goals and 2 assists).
- Bronze Ball (For third best player of the tournament) - Luka Modric.

The Golden Glove Award-

- This award is presented to the best goalkeeper in the competition as determined by FIFA, with clean sheets being the primary focus.
- Martinez, of Aston Villa, preserved three clean sheets and was one of the heroes of Argentina's shootout victories against the Netherlands in the semifinals and France in the final to win the championship.

Best young player-

- Argentina and Benfica midfielder Enzo Fernandez won the Young Player of the Tournament at the Qatar World Cup.
- The 21-year-old netted his first-ever goal for Argentina against Mexico during the group stage.

About the FIFA World Cup-

- The FIFA World Cup, often simply called the World Cup, is an international association football competition contested by the senior men's national teams of the members of the Fédération Internationale de Football Association (FIFA), the sport's global governing body.
- The tournament has been held every four years since the inaugural tournament in 1930, except in 1942 and 1946 when it was not held because of the Second World War.
- As of the 2022 FIFA World Cup, 22 final tournaments have been held and a total of 80 national teams have competed.
- The trophy has been won by eight national teams. Brazil, with five wins, are the only team to have played in every tournament.
- The other World Cup winners are Germany and Italy, with four titles each; Argentina, with three titles; France and inaugural winner Uruguay, each with two titles; and England and Spain, with one title each.
- Qatar hosted the 2022 tournament; in 2026 it will be jointly hosted by Canada, the United States and Mexico, which will give Mexico the distinction of being the first country to host games in three World Cups.
- The reigning champions are Argentina, who won their third title at the 2022 tournament, in Qatar.

12.3 What is the Bazball approach?

- Bazball is a novel approach that tries to shed some of cricket's long-standing assumptions on how to play, specifically the approach to batting.
- While Bazball runs the risk of batting teams losing quick wickets and folding for a paltry score, when it works, it undoubtedly takes them to a winning position. The trick is to make it work more often than not.
- On December 1, 2022 England reached a total of 506/4 at the end of the day's play in the ongoing three-match Test series between England and Pakistan.

- They scored these runs in just 75 overs at a run rate of 6.75, and after a bout of illness ran through their camp. This is an unprecedented record in test cricket. This approach is named as “Bazball” after new England coach Brendon “Baz” McCullum
- The previous record for the most runs on day one of a match (494/6) was set by Australia against South Africa in the latter’s debut tour to the island nation in 1910, 112 years ago.
- Test cricket is a conservative game that often rewards patience, defensive technique and temperamental fortitude over flair, bravado and innovation.
- Batters are supposed to last long, grinding oppositions out. The value of a wicket is paramount and the aim of the batter is to stay on the pitch for as long as possible, amassing runs off risk-free shots.
- It is the bowler’s job to attack, take wickets and move the game closer to its conclusion.

12.4 e-Sports

In news- The Government of India has given Esports a major boost by recognising & integrating it with mainline sports disciplines in the country.

Key updates-

- The President of India, in exercise of the powers "conferred by clause (3) of article 77 of the Constitution" amended the rules governing Esports and asked the Ministry of Electronics and Information Technology and the Sports Ministry to include "e-Sports as part of multi-sports events".
- There had been a growing demand for Esports to be included in the curriculum of multi-discipline events after it was included in the 2018 Jakarta Asian Games as a demonstration sport, meaning medals won in the sport were not counted in the official overall medals tally.
- The President's notification was issued on December 23, stating that the IT Ministry will be the nodal agency for online gaming-related matters and the sports ministry will have to include it in its curriculum.
- Esports will now fall under the purview of the Department of Sports, which is a division of the Ministry of Youth Affairs and Sports.
- Since athletes compete with one another in a variety of video game genres, video games will also be recognised as a competitive spectator sport.
- As a result, all competitions will be given the same serious consideration as other forms of athletic competition.

What is Esports?

- The term "eSports" refers to the organized, competitive video gaming industry.
- In the same video games, including Fortnite, League of Legends, Counter-Strike, Call of Duty, Overwatch, and Madden NFL, players from various leagues or teams compete against one another.
- Millions of fans who tune in to live events, watch them on TV, or follow them online keep track of these gamers.

13. PEOPLE IN NEWS

13.1 Dominique Lapierre’s connection with India

In news- Dominique Lapierre, the acclaimed French author and Padma Bhushan awardee, passed away recently.

A brief note on him-

- Lapierre was born on July 30, 1931, at Chatellaillon in France.
- His father’s job as a diplomat led to a peripatetic childhood for Lapierre, who spent a considerable part of his youth hitchhiking and travelling across the United States and doing odd jobs to fund his travels.

- At 18, Lapierre received a **Fulbright scholarship to study economics at Lafayette College in Easton, Pennsylvania.**
- Afterwards, he began his career as a **reporter for the weekly news magazine, Paris-Match.**
- In 1954, when he was 23 and serving in the French army, Lapierre met a young American named Larry Collins, a Yale graduate who later became a journalist with Newsweek.
- **Together, Lapierre and Collins wrote six bestselling books, including O Jerusalem! (1972) on the creation of the state of Israel; Freedom at Midnight (1975); Is Paris Burning? (1965), on the liberation of Paris during World War II, which sold close to 10 million copies in 30 languages; The Fifth Horseman (1980); Is New York Burning? (2005); and Or I'll Dress You In Mourning (1968).**

His connections with India-

- Lapierre had a special bond with India, travelling through the country and spending a lot of time in the city that was then called Calcutta, as well as in Bhopal.
- He was awarded the Padma Bhushan, India's third highest civilian award, in 2008.
- City of Joy, the novel that made him a household name in the country, was set in the slums near Howrah in West Bengal.
- In the aftermath of the success of the novel, Lapierre set up the City of Joy Foundation and donated a large share of his royalties to it to support humanitarian projects in West Bengal, which included the setting up of dispensaries, care centres for those suffering from leprosy and tuberculosis, hospital boats, schools and rehabilitation centres.
- Lapierre **spoke Bengali** fluently and would often travel in rickshaws on his visits to the city.
- **His investigative account, Five Past Midnight in Bhopal: The Epic Story of the World's Deadliest Industrial Disaster (1997; English translation in 2001),** written in collaboration with Javier Moro, traced the 1984 Bhopal gas tragedy and the role of Union Carbide in it.
- The author also **set up a primary school in the Oriya Basti colony in Bhopal,** a neighbourhood that features prominently in the book.
- However, the book also became controversial. In July 2009, a defamation suit was filed against Lapierre and Moro. It was later lifted by the Madhya Pradesh High Court in October 2009.
- Perhaps the **best known of Lapierre's works centred on India is Freedom at Midnight, (with Collins) which told the story of India's struggle for independence** and the great humanitarian tragedy of the Partition.

14. PLACES IN NEWS

14.1 Clash between India-China troops in Yangtse

In news- Recently, Indian troops clashed with the PLA troops trying to transgress the LAC in Yangtse area of Tawang Sector of Arunachal Pradesh.

Why clash over the Tawang area?

- It is one of the more serious dispute points between India and China in the overall border question.
- **Tawang is the birthplace of the sixth Dalai Lama** and an important pilgrimage centre for Tibetan Buddhists.
- **The 14th Dalai Lama took refuge in Tawang after he crossed over from Tibet to India in 1959,** spending some days in the monastery there before proceeding further.
- **Within Tawang, there are three "agreed areas" of differing Indian and Chinese perceptions of the LAC.**
- Yangtse, which is about 25 km from Tawang town, north of the Lungroo grazing ground, is one of these areas.
- As a result, it has been the site of regular "physical contact" between the Indian Army and the PLA, especially as the high ground is on the Indian side, giving it a commanding view of the Chinese side.

- The December 2022 incident is the most serious encounter between the two sides in recent years in this sector, and the first one resulting in injuries since the Galwan clash, in which 20 soldiers on the Indian side and an unspecified number of Chinese troops lost their lives.
- The incident came days after China expressed objection to **Operation Yudh Abhyas, an India-US joint military exercise** at Auli in the Uttarakhand hills, claiming it was a violation of 1993 and 1996 border agreements.

IDENTIFYING THE AREAS OF DISPUTE

IN JWG TALKS (1990S)

- WESTERN: Trig Heights, Demchok
- MIDDLE: Barahoti
- EASTERN: Namka Chu, Sumdorong Chu, Yangtse, Asaphila, Longju-Bisa

MAP EXCHANGE (2000)

- MIDDLE: Kaurik, Mumri Dogri, Shipki La

MAP COMPARISON (2002)

- WESTERN: North Samar Lungpa, east of Point 6556,

north of Kugrang river, area of Kongka La, Spanggur Gap, east of Mount Sajum opposite Dumchele

BY PLA ACTION

- WESTERN: North bank of Pangong Tso, south bank of Pangong Tso, Chumar, Galwan, Hot Springs
- EASTERN: Dichu area, Dibang Valley (Fish Tail I & II), Lamang