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1. AGRICULTURE

1.1 Millet International Initiative for Research and Awareness (MIIRA)

In news- During its G20 Presidency, India is planning to propose the launch of MIIRA, a global initiative to encourage the consumption and production of millet.

About MIIRA-

- It aims to connect the millet research organisations across the world while also supporting research on millet crops.
- Besides setting up a web platform to connect researchers and holding international research conferences, the plan is also to promote millet consumption by raising awareness.
- For MIIRA to take off, India will contribute the “seed money” while each G20 member will later have to contribute to its budget in the form of a membership fee.
- The MIIRA secretariat will be in Delhi, with India being a major producer of millets, ensure a flow of investment from the country’s industry and research bodies.
- It is in line with the UN declaring 2023 as the International Year of Millets and the Centre’s plan to make India a global hub for millets.
- While the main G20 Summit will be held on September 9-10, 2023 in New Delhi, India’s Presidency year will also see five meetings on agriculture: three of Agriculture Deputies, one of chief scientists, and one where the Agriculture Ministers of all G-20 countries will gather.
- MIIRA will be launched keeping in mind the nutritional value and the climate resilient nature of millets.
- In her Budget speech, Finance Minister described various types of millets as ‘Shree Anna’.
- To make India a global hub for Shree Anna, the Indian Institute of Millet Research, Hyderabad will be supported as the Centre of Excellence for sharing best practices, research and technologies at the international level.

1.2 Push for Shrimp farming in Punjab

In news- Punjab saw its first state-level shrimp mela (shrimp fair) in Enakhra village of Muktsar district.

Key updates-

- While **shrimp farming began in the state in 2016-17**, the mela is a state government push to create more awareness about it.
- **South-west Punjab has saline underground water** not fit for agriculture. Also, waterlogging is a perennial issue in this belt.
- **Therefore, shrimp farming was proposed as a solution for farmers whose land was lying unutilised.**
- The project was funded jointly by the Centre and the state government.
- At present, various schemes are being run under the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)**, which started in 2021 and will run till 2025 to promote ‘blue revolution’.
- Women and cooperative societies run by women get a 60 percent subsidy.

What is shrimp farming?

- Shrimp farming is an aquaculture-based activity in marine or freshwater environments to produce shrimp for human consumption.
- **Shrimp are crustaceans (a form of shellfish) with elongated bodies** and a primarily swimming mode of locomotion, although some crustaceans outside of this order are referred to as "shrimp".
- **Under a broader definition, shrimp may be synonymous with prawn**, covering stalk-eyed swimming crustaceans with long, narrow muscular tails (abdomens), long whiskers (antennae), and slender legs.

1.3 IARI's InfoCrop

In news- The ICAR-Indian Agricultural Research Institute(IARI) scientists used InfoCrop version 2.1 to study the long-term impact of climate change and crop management practices on yield.

About InfoCrop-

- It is India's only dynamic crop simulation model developed and released by the institute in 2015.
- InfoCrop is more suited for India as it has the life cycle data for almost all the local varieties of 11 crops: paddy, wheat, maize, sorghum, pearl millet, pigeon pea, chickpea, soybean, groundnut, potato and cotton.
- In InfoCrop, the parameters are already calibrated to Indian crop varieties and they are updated at regular intervals by the institute.
- The parameters deal with aspects of weather (precipitation, temperature, radiation and others), crop growth (phenology, grain characteristics, leaf growth, temperature and flooding sensitivity and others), soil (texture and organic carbon, water holding characteristics and pH levels) and pests and crop management (organic matter, fertiliser and irrigation).
- Besides forecasting, simulation models can be used to assess crop loss in the aftermath of an extreme weather event, which can then be used to provide relief packages.
- Since the model can be used to simulate management scenarios, it can help improve crop yield.
- The model has an 85 per cent accuracy rate, which is on par with widely used dynamic models such as the Decision Support System for Agrotechnology Transfer model, developed by the US, and Agriculture Production Systems sIMulator, developed by Australia.
- IARI launched its first simulation model, Wheat Growth Simulator, in the 1990s.
- It could predict the yield of two wheat crop varieties.
- In 2004, InfoCrop version 1 was launched.
- The model had to be updated because it did not include crucial parameters such as CO₂ levels.

1.4 Integrated rice-fish farming by Apatanis

In news- The Apatanis, one of the major ethnic groups of the eastern Himalayas, practice a distinctive form of agriculture where rice and fish are grown together.

About Integrated rice-fish farming-

- These farmers have been practising integrated rice-fish farming in their mountain terraces of Arunachal Pradesh since the 1960s.
- Apatani Plateau has a climate ranging from humid subtropical to temperate.
- So, this plateau receives adequate rainfall during the summer season and the permeability and water-retaining capacity of the clayey, loamy soil favour this unique farming technique.
- This integrated rice-fish cultivation is a low-input and eco-friendly practice.
- The stocked fish practically depend on the natural food sources of the rice fields and thus, farmers hardly need to use any supplementary fish feeds.
- The farmers sometimes use household and agricultural wastes and excreta of domestic animals like pigs, cows, mithun (*Bos frontalis*) and goats to make farming more sustainable and organic.
- Moreover, **azolla and lemna are also grown in the field water as nitrogen fixers.**
- The water sources in these high-altitude rice fields are mountain streams and rainwater trickled down during the monsoon season.
- **Bamboo pipes are being used to distribute water** from the networks of earthen irrigation channels using two outlet pipes.
- During the culture of fish, women folk participate as the major workforce and **use agricultural tools such as Dao (sickle) and dibbling sticks.**
- **Fish enhances rice productivity (by 10-15 per cent) by controlling the growth of algae, weeds and insects,** providing nutrient input through fish excreta and promoting tillering of the rice through the movement of fish inside the field.

- Further, the mineralisation of organic matter, puddling of mud and soil aeration by other benthos enhances rice yield here.

About Apatanis-

- The Apatani (or Tanw, Tanii) are a tribal group of people living in the Ziro valley in the Lower Subansiri district of Arunachal Pradesh in India.
- The major festivals of Apatanis are the Myoko, Dree, Yapung and Murung.
- The Apatanis speak a local language called Tani, including Apatani, English and Hindi.
- They worship the sun and the moon.
- The tribe has extensive knowledge of herbal remedies to cure most of their ailments.
- Local ritual specialists also take part in chanting, blood-letting and animal sacrifices in a bid to keep the inhabitants healthy.
- They are known for their effective traditional village council called bulyañ, which supervises, guides and have legal oversight over the activities of individuals that affect the community as a whole.
- Unlike the other tribes, they are non-nomadic in nature.
- UNESCO has proposed the Apatani valley for inclusion as a World Heritage Site for its “extremely high productivity” and “unique” way of preserving the ecology.

1.5 IARI scientists developed three varieties of wheat

In news- ICAR-Indian Agricultural Research Institute scientists developed new climate-smart varieties of wheat, amenable to early sowing and escaping the impact of March mercury spikes.

About wheat varieties-

- The IARI scientists have developed three varieties, all of them incorporating genes that are responsible for the mild vernalisation requirement preventing premature flowering and early heading.
- The first, HDCSW-18, was released and officially notified in 2016.
- Although having a potential wheat yield of over 7 tonnes per hectare – as against 6-6.5 tonnes for existing popular varieties such HD-2967 and HD-3086 – its plants grew to 105-110 cm.
- Being tall, compared to 90-95 cm for normal high-yielding varieties, made them prone to lodging or bending over when their earheads were heavy with well-filled grains.
- The second variety HD-3410, released in 2022, has higher yield potential (7.5 tonnes/hectare) with lower plant height (100-105 cm).
- But it's the third one, HD-3385, which looks most promising. With the same yields as HD-3410, plant height of just 95 cm and strong stems, it is least lodging-prone and most amenable for early sowing.
- This variety, sown this time at IARI's trial fields on October 22, has reached pollination stage while the emergence of the earheads is yet to start for the wheat that was planted in the normal time.
- IARI has registered HD-3385 with the Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA).
- It has also licensed the variety to the DCM Shriram Ltd-owned Bioseed for undertaking multi-location trials and seed multiplication.
- This is IARI's first ever such public-private partnership experiment.

1.6 Commercial cultivation of liquorice (Mulethi)

In news- Himachal Pradesh has become the first state in India to have organized cultivation of Mulethi recently.

What is Mulethi (Licorice)?

- Mulethi is a perennial shrub having sweet roots due to the presence of glycyrrhizin, which is 50 times sweeter than sucrose and it is used as a natural sweetener in herbal medicines, flavouring in candies and tobacco.

- Licorice, scientifically known as Glycyrrhiza glabra.
- It is also used in traditional medicine against treating chest and lung diseases etc.
- Mulethi is grown mainly in Afghanistan, while minor producing countries include Pakistan, China, Nepal and India.
- The properties of licorice are given as follows:
- It may show antibacterial, anti-inflammatory properties.
- It may show expectorant (helps in secretion of sputum) property.
- It may show demulcent (relieves irritation) property.
- Combat digestive issues.
- Helps in weight reduction.
- Improves immunity & combats respiratory infections.
- India imports 8047 tonnes of liquorice annually from Afghanistan, China and Nepal.

2. DISASTER MANAGEMENT

2.1 New policy to help Indian communities displaced by annual river & coastal erosion

In news- The National Disaster Management Authority (NDMA) received the final inputs recently from disaster management officials and researchers on the draft of India's first national policy for the mitigation and rehabilitation of the people affected by river and coastal erosion.

Key highlights of the new policy-

- The Union Ministry of Home Affairs had directed NDMA to draft a policy based on the 15th Finance Commission's report for 2021.
- **Until now, most policies in the country only address displacement after sudden rapid-onset disasters such as floods and cyclones.**
- **The 15th Finance Commission's report considers two aspects related to the new policy.**
 1. **First, it introduces mitigation measures to prevent erosion** under the National Disaster Mitigation Fund (NDMF), with an allocation of Rs 1,500 crore for 2021-26.
 2. **Second, for the resettlement of displaced people affected by erosion**, it allocates R 1,000 crore for the same period under the National Disaster Relief Fund (NDRF).
- This is being taken out of the recovery and reconstruction window introduced for the first time under NDRF in 2021.
- **For both funds, state governments will have to avail resources on a cost-sharing basis**, contributing 25 per cent to the costs of mitigation and resettlement associated with coastal and river erosion; however, northeastern states have to only pool 10 percent of state funds.
- NDMA will coordinate the allocations and expenses under NDRF and NDMF at the national level for mitigation and rehabilitation.
- The commission's report emphasised that **states must follow timelines for mitigation and rehabilitation projects without delays.**
- The draft policy said that **projects under NDRF and NDMF should be sanctioned in such a manner that they can be completed within the award period of the Commission."**
- NDMA's draft policy stated that **district disaster management authorities would be the nodal agency to implement the measures**, aided by other district agencies and a specific panchayat-level committee.
- It put in place some institutional mechanisms to manage displacement due to coastal and river erosion, which can be enacted under the Disaster Management Act of 2005.
- **The DDMA will prepare mitigation and rehabilitation plans and submit them to the SDMAs**, from where the proposed measures will be appraised by NDMA and finally submitted to the home ministry.
- A high-level committee of the ministry will then approve the disbursement of funds.
- After plans are approved and implementation begins, DDMA's will also be responsible for organising, monitoring and evaluation of the efforts under the supervision of their state and national counterparts.

- The new draft policy insists on mapping coastal and river erosion impacts and coming up with a database of diverse challenges confronted by the affected and vulnerable habitations.
- It noted that mapping of fallow areas must be taken up for rehabilitation with discussions with the affected and vulnerable communities for their acceptability.
- The draft policy also recommends impact and vulnerability assessments of regions threatened by coastal and river erosion to be undertaken periodically, which will be spearheaded by SDMAs in coordination with the state departments and DDMAAs.

3. ECONOMY

3.1 RBI's QR code-based Coin Vending Machine (QCVM)

In news- RBI has recently announced a pilot project for QR code-based Coin Vending Machine.

About QR code-based Coin Vending Machine-

- The QCVM is a cashless coin dispensation machine which would dispense coins against a debit to the customer's bank account using Unified Payments Interface (UPI).
- It was launched in collaboration with a few top banks.
- Unlike a cash-based traditional Coin Vending Machine, the QCVM would eliminate the need for physical tendering of banknotes and their authentication.
- Customers will also have the option to withdraw coins in the required quantity and denominations in QCVMs.
- The pilot project is planned to be initially rolled out at 19 locations in 12 cities across the country.
- These vending machines are intended to be installed at public places such as railway stations, shopping malls, marketplaces to enhance ease and accessibility.
- Based on the learnings from the pilot tests, guidelines would be issued to banks to promote better distribution of coins using QCVMs.

3.2 Jantri or Annual Statement of Rates (ASR)

In news- Recently, the Gujarat government announced a 100 percent hike in jantri rates – ready reckoner rates applicable to any property bought or sold across the state – with immediate effect from February 4.

What is Jantri?

- Jantri or Annual Statement of Rates (ASR) is a minimum rate fixed by state governments for registration of any real estate property that undergoes a change in ownership.
- These rates differ between cities.
- Even within localities, jantri rates may differ based on property type (residential, commercial, institutional), location, size of property, and various other factors.
- When an old or existing property is bought by a new owner, it has to be registered as per the jantri or the market (selling) price, whichever is higher.
- Jantri rates can change annually but were last hiked in April 2011.
- The recent move is expected to curb black money in the real estate sector, by bridging the gap between jantri rates and the actual market price of a property.
- The ASR is an essential guideline for the assessment of stamp duty, which is charged on the agreement of sale of a property.
- It also enables to indicate the property prices for every location or a specified area within an administrative boundary.

3.3 Upnext India under Market Access Initiative (MAI) Scheme

In news- Chairman Apparel Export Promotion Council (AEPC) along with the other Export Council (EC) members inaugurated the first edition of upnext India 2023 in presence of international buyers and exhibitors, at Apparel House, Gurugram.

What is upnext India 2023?

- This initiative in the form of a series of Reverse Buyer Seller meet under the name of “UPNEXT INDIA” kick started with Japan.
- Upnext India is organized by AEPC and supported by the Ministry of Commerce and Industry under the Market Access Initiative (MAI) Scheme.

Market Access Initiative (MAI) Scheme-

- It is an **Export Promotion Scheme** envisaged to act as a catalyst to promote India’s exports on a sustained basis.
- The scheme is **formulated on focus product-focus country approach** to evolve specific market and specific product through market studies/survey.
- **Assistance would be provided to Export Promotion Organizations/Trade Promotion Organizations/National Level Institutions/ Research Institutions/Universities/Laboratories, Exporters etc.,** for enhancement of exports through accessing new markets or through increasing the share in the existing markets.
- Under the Scheme the level of assistance for each eligible activities has been fixed.

The following activities are eligible for financial assistance under the Scheme-

- Marketing Projects Abroad.
- Capacity Building.
- Support for Statutory Compliances.
- Studies.
- Project Development.
- Developing Foreign Trade Facilitation web Portal.
- To support Cottage and handicrafts units.

3.4 What is an I-T survey?

In news- Recently, the Income Tax (I-T) Department has conducted surveys at the premises of the British Broadcasting Corporation (BBC) in Delhi and Mumbai.

Legal provisions for conducting such surveys-

- The surveys at the BBC’s offices were carried out under various provisions of the I-T Act, 1961, such as Section 133A, which gives the I-T Department the power to carry out “surveys” to collect hidden information.
- The provision for surveys was incorporated into the Act through an amendment carried out in 1964.
- Section 133A allows an authorised officer to enter any place of business or profession or charitable activity within their jurisdiction to verify the books of account or other documents, cash, stock, or other valuable article or thing, which may be useful for or relevant to any proceeding under the Act.
- An I-T authority may, during the survey, make an inventory of any cash, stock, or other valuables; it may record the statements of anyone, or place marks of identification on the books and documents, or take their extracts or copies.
- The I-T authority may also “impound and retain any books of account or other documents after recording reasons for doing so”.

- However, to retain such books for more than 15 days (excluding holidays), prior approval of a senior officer, including the Principal Chief Commissioner or Chief Commissioner or Principal Director General or Director General or Principal Commissioner or Commissioner, must be obtained.
- The provisions for impounding or seizing the goods were introduced only by the Finance Act, 2002.

What is an I-T “search”?

- A “search” typically refers to what is called a “raid”, although the word ‘raid’ has not been defined anywhere in the Income-Tax Act.
- However, “search” has been defined under Section 132 of the Act.
- Under this Section, the I-T Department can carry out a process of inspection by entering and searching any building where it has reasons to believe someone is in possession of undisclosed income or property like money, bullion, gold.
- The Act says that during a search, any authorized officer including the Deputy Director of Inspection, Inspecting Assistant Commissioner, Assistant Director of Inspection, or Income-tax Officer can:
 - Enter and search any building or place where he has reason to suspect that such books of account, other documents, money, bullion, jewelry, or other valuable article or thing are kept.
 - Break open the lock of any door, box, locker, safe, almirah, or other receptacles for exercising the powers conferred by clause (i) where the keys thereof are not available.
 - Seize any such books of account, other documents, money, bullion, jewelry, or other valuable article or thing found as a result of such search.
 - Place marks of identification on any books of account or other documents or make or cause to be made extracts or copies therefrom.
 - Make a note or an inventory of any such money, bullion, jewelry, or other valuable article or thing.

The difference between a “search” and a “survey”-

- Broadly speaking, a search is a more serious proceeding than a survey, with larger consequences.
- Search, as defined under Section 132, can take place anywhere within the jurisdiction of the authorized officer.
- A survey under Section 133A(1) can only be conducted within the limits of the area assigned to the officer — or at any place occupied by any person in respect of whom he exercises jurisdiction — at which a business or profession, or an activity for a charitable purpose, is carried on.
- Also, surveys can be carried out only during working hours on business days, whereas a search can happen on any day after sunrise and continue until the procedures are completed.
- Finally, while the scope of a survey is limited to the inspection of books and verification of cash and inventory, in a search, the entire premises can be inspected to unravel undisclosed assets, with the help of police.

3.5 Mahila Samman Savings Certificate scheme

In news- The Union Finance Minister has announced a **one-time small savings scheme**, the Mahila Samman Savings Certificate (MSSC) for women investors in Budget 2023.

Key features of MSSC-

- Through this scheme, individuals can make deposits in the name of a woman or a girl child.
- This is a one-time scheme, and it will remain available for two years i.e., up to March 2025.
- The scheme is backed by the central government.
- Partial withdrawal option is available under this scheme.
- It will offer deposit facility upto Rs 2 lakh in the name of women or girls for tenure of 2 years (up to March 2025) at fixed interest rate of 7.5 per cent with partial withdrawal option.
- MSSC account opening facility is likely to be made available at the Post Office. However, the Government may allow some banks also to offer the MSSC scheme.

- The savings account is easily portable in the event of a move, and the woman has no restrictions on when or how she withdraws her money.

3.6 Air India's mega Airbus, Boeing order

In news- Tata Group-owned Air India (AI) placed two mega orders recently, adding up to a staggering 470 aircraft for 250 planes with Europe's Airbus consortium, and 220 with Boeing Co. of the United States.

Why this order is significant?

- This is the largest order placed by an airline in one go anywhere in the world, beating the 2011 order by American Airlines for a combined 460 aircraft.
- The biggest order by an Indian carrier before this was IndiGo's 300-aircraft order in 2019.
- Going by the list price, the AI order value is estimated between \$70 billion and \$80 billion.
- However, manufacturers usually offer heavy discounts on such large orders, so the actual deal size is likely to be considerably smaller.

Details of the Air India order-

- Seventy of the 470 aircraft are wide-body or twin-aisle planes for long-haul flights.
- Airbus has got the bigger order, but the Boeing order includes an option for a 70-plane top-up, taking the possible order size to 540 aircraft.
- AI's current fleet is estimated at 140-strong, with the majority being narrow-body planes.
- AI largely depends on Airbus planes for domestic operations, while its wide-body fleet comprises Boeing aircraft.
- Air India Express operates only Boeing narrow-body planes.
- The erstwhile Indian Airlines and Air India had placed an order for a total 111 single-aisle Airbus and twin-aisle Boeing planes more than 17 years ago.
- The two government-owned carriers of the time were later merged under the Air India brand.

Airbus (France) vs Boeing (US) in India-

- Over the years, Airbus has emerged as the undisputed leader in India's domestic aviation space, with the lion's share of narrow-body planes coming from its stable specifically, the A320 family.
- With the exceptions of SpiceJet and new entrant Akasa Air, all major airlines in India-IndiGo, Air India, Vistara, Go First, AIX Connect depend almost entirely on Airbus for narrow-body operations.
- Among wide-body aircraft, of which there aren't too many in India, Boeing is the leader — both Air India and Vistara have all-Boeing wide-body fleets.
- The last Indian carrier to deploy Airbus wide-body planes was Jet Airways.

3.7 Payment aggregators

In news- The payments arm of big technology companies Amazon and Google are among 32 firms that have been given in-principle approval by the Reserve Bank of India (RBI) to operate as online payment aggregators.

Key updates-

- Apart from Amazon and Google, approvals have also been granted to Reliance Payment Solutions, a part of Reliance Jio Infocomm, and the payments platform of food delivery firm Zomato.
- **The RBI has for the first time released a full list of the entities to which it has granted a payment aggregator licence**, as well as those whose applications are still in process, and those whose applications it has rejected.

Who are payment aggregators?

- Online payment aggregators can **onboard digital merchants and accept payments on their behalf** after getting a licence from the RBI.
- The central bank introduced a framework for such entities in March 2020.
- Under the payment aggregator framework, **only firms approved by the RBI can acquire and offer payment services to merchants**, which brings them under the direct purview of the regulator.
- According to RBI rules, **a company applying for aggregator authorisation must have a minimum net worth of Rs 15 crore in the first year of application**, and at least Rs 25 crore by the second year.
- It also must fulfill the “fit and proper” criteria, and be compliant with global payment security standards.

Other action is RBI taking to regulate fintech firms-

- The RBI has prepared a “white-list” of digital lending apps in the country, which it might soon release.
- The RBI in August 2022 issued guidelines for entities engaged in digital lending that stated that all digital loans must be disbursed and repaid through bank accounts of regulated entities only, without the pass-through of lending service providers (LSPs) or other third parties.

3.8 The transfer pricing rules

In news- The government sources said that IT surveys at the premises of the BBC in Delhi and Mumbai recently were conducted in view of the BBC's deliberate non-compliance with the transfer pricing rules and its vast diversion of profits.

What is transfer pricing?

- According to the I-T Department, **“transfer pricing generally refers to prices of transactions between associated enterprises** which may take place under conditions differing from those taking place between independent enterprises”.
- Transfer pricing refers to the value attached to transfers of goods, services, and technology between related entities, and between unrelated parties that are controlled by a common entity.

How does transfer pricing work?

- Suppose a company A purchases goods for 100 rupees and sells it to its associated company B in another country for 200 rupees, who in turn sells in the open market for 400 rupees.
- Had A sold it (the good) direct, it would have made a profit of 300 rupees. But by routing it through B, it (A) restricted it (profit) to 100 rupees, permitting B to appropriate the balance.
- The transaction between A and B is arranged and not governed by market forces. The profit of 200 rupees is, thereby, shifted to the country of B.
- The goods are transferred on a price (transfer price) which is arbitrary or dictated (200 hundred rupees), but not on the market price (400 rupees).

Effects of transfer pricing-

- The effect of transfer pricing is that the parent company or a specific subsidiary tends to produce insufficient taxable income or excessive loss on a transaction.
- For instance, profits accruing to the parent can be increased by setting high transfer prices to siphon profits from subsidiaries domiciled in high-tax countries, and low transfer prices to move profits to subsidiaries located in low-tax jurisdiction.
- As an example of this, a group which manufactures products in a high-tax country may decide to sell them at a low profit to its affiliate sales company based in a tax haven country.

- That company would in turn sell the product at an arm's length price, and the resulting (inflated) profit would be subject to little or no tax in that country. The result is revenue loss and also a drain on foreign exchange reserves.

What is the “arm’s length arrangement” that the BBC has allegedly violated?

- Section 92F(ii) of the Income Tax Act, 1961 defines arm's length price as “a price which is applied or proposed to be applied in a transaction between persons other than associated enterprises, in uncontrolled conditions”.
- Section 92C (1) says arm's length shall be determined by the “most appropriate” among the following methods:
 - a. Comparable uncontrolled price method.
 - b. Resale price method.
 - c. Cost plus method,
 - d. Profit split method.
 - e. Transactional net margin method.
 - f. Such other methods may be prescribed by the Board.

3.9 India's UPI and Singapore's PayNow

In news- India's UPI and Singapore's PayNow integration was launched recently.

What are UPI and PayNow?

- **Unified Payments Interface (UPI) is India's mobile-based fast payment system**, which facilitates customers to make round-the-clock payments instantly, using a Virtual Payment Address (VPA) created by the customer.
- It eliminates the risk of sharing bank account details by the remitter. UPI supports both Person-to-Person (P2P) and Person-to-Merchant (P2M) payments and it also enables a user to send or receive money.
- **PayNow is a fast payment system in Singapore. It enables peer-to-peer funds transfer service**, available to retail customers through participating banks and Non-Bank Financial Institutions (NFI) in Singapore.
- **It allows users to send and receive instant funds from one bank or e-wallet account to another in Singapore** by using just their mobile number, Singapore National Registration Identity Card (NRIC)/Foreign Identification Number (FIN), or VPA.

The UPI-PayNow linkage-

- The UPI-PayNow linkage is a significant milestone in the development of infrastructure for cross-border payments between India and Singapore and closely aligns with the G20's financial inclusion priorities of driving faster, cheaper and more transparent cross-border payments.
- India is chairing the G20 on the basis of the rotational membership structure this year.
- Singapore, although not a G20 member, has been invited to participate in the G20 Summits and its related processes from 2010 to 2011 and from 2013 to 2023.
- The project to link both the fast payment systems was initiated in September 2021 to facilitate faster, more efficient and transparent cross-border transactions relating to trade, travel and remittances between the two countries.

Benefits of UPI-PayNow linkage-

- The UPI-PayNow linkage will **enable users of each of the two fast payment systems to make instant, low-cost fund transfers** on a reciprocal basis without a need to get on board the other payment system.
- It will also help the Indian diaspora in Singapore, especially migrant workers and students, through the instantaneous and **low-cost transfer of money from Singapore to India and vice-versa**.

3.10 What is the EPFO's higher pension option?

In news- The Employees' Provident Fund Organisation (EPFO) has recently issued guidelines to allow a section of its older members to opt for higher pension under the Employees' Pension Scheme (EPS).

What does the new EPFO circular say?

- The EPFO instructed its field officers to allow the option for higher contribution by:
- Employees and employers who had **contributed on salary exceeding the wage ceiling of Rs 5,000 or 6,500.**
- Those who **did not exercise the joint option** (by employer and employee) while being members of Employees' Pension Scheme (EPS 95).
- Those who were **members prior to September 1, 2014** and continued to be a member on or after that date.
- Employees who had already contributed on higher wage but not exercised the option formally will be required to submit an application at the EPFO regional office. T
- The circular said that in case of the amount requiring adjustment from provident fund to pension fund, and any re-deposit to the fund, explicit consent of the employee will be given in the joint option form.
- In case of transfer of funds from exempted provident fund trust to pension fund of EPFO, an undertaking of the trustee shall be submitted.
- In case of employees of unexempted establishments, refund of requisite employer's share of contribution, the same shall be deposited with interest at the rate declared under Para 60 of EPF Scheme, 1952, till the date of actual refund.

What does this mean for EPFO and members of EPS?

For EPFO:

- This will mean a **stream of sharply higher pension payouts**, when linked to actual basic salary rather than the Rs 15,000 ceiling.
- Experts said the pension scheme does not entail defined benefits but involves defined contribution, which could create strain on the finances of the retirement fund body in future.
- For instance, an employee may have worked, and contributed for pension for 10 years, but after superannuation at age 58, will get a pension until death, which could be a period far exceeding the contributory period of 10 years.
- The payouts could extend beyond the death of the member, with a provision for pension to the dependent family members as well.

For members and employers:

- This would essentially imply higher annuity after retirement.
- The choice for a higher pension would then involve transferring of funds from the provident fund to the pension fund going back until September 2014.
- In times of higher inflation, and with actual salaries having risen way beyond the pensionable salary cap of Rs 15,000, this would provide better social security cover for workers after retirement.
- Only a negligible percentage of EPFO members — with salaries higher than the Rs 15,000 a month pensionable salary cap — had earlier opted for contributions based on actual salaries; more employees are now expected to opt for the higher pension scheme.

Current pension structure-

- The Employees' Provident Funds and Miscellaneous Provisions Act, 1952 did not provide for a pension scheme.
- The EPS, administered by the EPFO, came into being in 1995. The pension fund was to comprise a deposit of 8.33% of the employers' contribution towards the PF corpus.

- Both employees and employers contribute 12% of the employee's basic salary, dearness allowance and retaining allowance, if any, to the EPF.
- The employee's entire contribution goes to EPF, while the 12% contribution by the employer is split as 3.67% to EPF and 8.33% to EPS.
- The Government of India contributes 1.16% for an employee's pension. Employees do not contribute to the pension scheme.
- At the time of introduction of EPS, the maximum pensionable salary was Rs 5,000 per month.
- This was subsequently raised to Rs 6,500 and, from September 1, 2014, to Rs 15,000.
- The pension contribution currently is 8.33% of Rs 15,000, that is, Rs 1,250 — unless the employee and employer have opted to contribute at actual basic salary exceeding the pensionable salary.

Eligibility to get pension under the EPS-

- The EPS provides employees with pension after the age of 58, if they have rendered at least 10 years of service and retired at age 58. If a member leaves employment between ages 50 and 57, they can avail early (reduced) pension.
- The monthly pension is computed according to this formula: Monthly pension = pensionable salary x pensionable service / 70, based on a pro rata basis linked to maximum monthly pensionable salary of Rs 6,500 for pensionable service up to September 1, 2014, and Rs 15,000 thereafter.
- Under the pre-amendment scheme, the pensionable salary was computed as the average of the salary drawn during the 12 months prior to exit from membership of the pension fund.
- The 2014 amendments raised this to an average of 60 months prior to exit.

The 2014 amendments in EPS-

- The amendments of August 22, 2014 raised the pensionable salary cap to Rs 15,000 a month from Rs 6,500, and allowed members along with their employers to contribute 8.33% on their actual salaries (if it exceeded the cap) towards EPS.
- It gave all EPS members as on September 1, 2014 six months to opt for the amended scheme, extendable by another six months at the discretion of the Regional Provident Fund Commissioner.
- Members opting for pension linked to actual salaries exceeding the wage ceiling were required to contribute an additional 1.16% of their salary towards the pension fund.
- Those who did not exercise the option within the stipulated or extended period were deemed to have not opted for contribution over the pensionable salary cap and the extra contributions already made to the pension fund were to be diverted to the provident fund account of the member, along with interest.

The Supreme Court's November 2022 judgment-

- Fifty-four writ petitions were filed by employees from both exempt and unexempted establishments asking for the amendments to be struck down.
- The employees cited lack of information and awareness about the time window to opt for the amended pension scheme linked to higher pensionable salary.
- A three-judge Bench of the Chief Justice of India U U Lalit and Justices Aniruddha Bose and Sudhanshu Dhulia upheld the 2014 amendments, but extended the time to opt for the new scheme by four months.
- The operation of the amendment requiring members to make the 1.16% contribution was suspended by the court for six months.

3.11 Perpetual funds

In news- The Securities and Exchange Board of India (SEBI) is deliberating on allowing permanent capital vehicles (PCVs), evergreen or perpetual funds, where the capital available is managed for an unlimited period of time, into India.

What are perpetual funds?

- Perpetual funds do not have a fixed investment period.
- They continue until the time one wishes to invest.
- These funds can potentially exist for perpetuity and are aimed at long-term investors such as pension funds and insurance firms which do not want return of capital but regular income.
- The funds could be structured in a way to give investors an option to redeem a certain portion of their investment after a 5, 10 or 15-year lock-in.
- PCVs can thus be considered as an alternative to private equity(PE) funds with limited life cycles.
- Several alternative investment funds (AIFs) in India have been facing an issue with fund extensions and have been unable to liquidate their investments within the given life cycle of the fund, which is typically 8-12 years.
- Unlike traditional funds which have a finite tenure, PCVs can have an open term with respect to the tenure and don't have a sunset period
- PCVs can be of various types, including limited partnerships traded publicly on an exchange, real estate investment trusts, closed-ended funds, interval funds and variable funds such as annuities and life insurance.
- In the Indian context, since Category I and II AIFs are permitted to launch close-ended schemes only, legally the concept of evergreen funds has not evolved in the country.

3.12 Rating of Buildings or Areas for Digital Connectivity

In news- The Telecom Regulatory Authority of India (TRAI) has recently released its recommendations on "Rating of Buildings or Areas for Digital Connectivity".

Recommendations of TRAI-

- TRAI issued Consultation Paper (CP) on "Rating of Buildings or Areas for Digital Connectivity" on 25th March 2022, to seek inputs from stakeholders on issues raised, by 07th July 2022.
- The emphasis of these recommendations is on providing a framework for creation of an ecosystem for Digital Connectivity Infrastructure (DCI) to be an intrinsic part of building development plan similar to other building services such as water, electricity or Fire Safety System.
- DCI is to be co-designed and co created along with building development through collaborations among various stakeholders including Property Managers (owner or developer or builder etc.), service providers, infrastructure providers, DCI Professionals and Authorities at various urban/local bodies.
- This framework shall also open job opportunities for the young professionals to become DCI Professionals and be part of Design, Deployment and Evaluation of Digital Connectivity Infrastructure.
- TRAI has also proposed a new chapter on 'Digital Connectivity Infrastructures in Buildings' to be included in Model Building Bye Laws 2016 by modifying and updating existing provisions added in MBBL as Annexure through an Addendum to Model Building Bye Laws 2016 issued by Town and Country Planning Organization (TCPO) of Ministry of Housing and Urban Affairs (MoHUA).
- TRAI further emphasized that DCI developed in the Buildings by the Property Managers (Developers, Builders etc) should be accessible to all service providers in a fair, transparent, non-discriminatory and non-chargeable basis.
- The recommendations also include development of a framework for Rating of the buildings for digital connectivity, which will add value to the property.
- TRAI will come up, separately, with appropriate regulatory framework for Rating of Buildings, which will also include the issue of Rating certification.

3.13 India's first municipal bond index- IBMX

In news- NSE Indices Ltd, an NSE arm, has launched the country's first ever municipal bond index recently.

About municipal bond index-

- The new Nifty India Municipal Bond Index will track the performance of municipal bonds issued by Indian municipal corporations across maturities and having investment grade credit rating.
- Presently, the index has 28 municipal bonds issued by 10 issuers all having credit rating in the AA category.
- The index constituents are assigned weights based on their outstanding amount.
- The Indian municipal bond market has seen a resurgence of issuances after Sebi's Issue and Listing of Municipal Debt Securities Regulations, 2015 came into effect and a renewed emphasis on municipal finance by policymakers.
- Raising money from capital markets incentivises municipal corporations to fund new projects and improve civic infrastructure while encouraging them to become financially disciplined and governance oriented.
- The proceeds from bonds issued by municipal corporations can be utilised to finance the expansion of essential municipal services through growth-driven infrastructure projects and can contribute to bridging India's urban infrastructure financing gap.
- The index is computed using the total return methodology including price return and coupon return.
- The index has a base date of January 1, 2021, and a base value of 1,000.
- The index will be reviewed quarterly.

What is a Municipal bond?

- A municipal bond is a debt security issued by a state, municipality or county to finance its capital expenditures, including the construction of highways, bridges or schools.

4. ENVIRONMENT

4.1 Omorgus Khandesh

In news- Omorgus Khandesh is the new beetle species that has been discovered in India recently.

About Omorgus Khandesh-

- Omorgus Khandesh is necrophagous and is, therefore, also called a keratin beetle.
- During the decomposition of a body, blowflies are amongst the first ones to arrive in the early stages.
- Meanwhile, the final successional stage is with the arrival of the keratin feeders, thus they have importance in forensic science.
- The bug was discovered by scientist Aparna Sureshchandra Kalawate who works with Zoological Survey of India, Western Regional Centre (WRC), Pune.
- The beetle was found in the collections of WRC.
- The new species belongs to the Trogidae family.
- With the addition of this new species, now there are a total of 14 extant species of this family in India.
- The beetles of this group are sometimes called hide beetles as they tend to cover their body under the soil and hide.
- They are usually black or grey and encrusted in dirt.
- Omorgus Khandesh is mainly associated with bird and mammal nests or burrows and the details of their life histories are poorly known.
- They feign death upon being disturbed and become motionless.

4.2 India's first Marine Spatial Planning

In news- Puducherry has launched the country's first Marine Spatial Planning (MSP) framework as part of a pact under the Indo-Norway Integrated Ocean Initiative.

About Marine Spatial Planning (MSP) framework-

- It is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process.
- **It seeks to balance growth alongside sustainable management of ocean resources** and coastal environment preservation.
- **Puducherry and Lakshadweep were chosen as coastlines to pilot the MSP initiative that grew out of a 2019 memorandum of understanding** that envisaged India and Norway collaborating on implementing MSP in the oceanic space.
- The World Bank and the United Nations Environment Programme (UNEP) have expressed interest in supporting MoES in conducting MSP, a societal-beneficial initiative for India's coastal regions.
- It is said that the **MSP would serve as a vital governance tool in ensuring the emergence of a blue economy** characterised by a sustainable and equitable ocean resource management, instead of an environmentally unsustainable “brown economy.”
- During the same event, Chief Minister of **Puducherry** N. Rangasamy released ‘**The Shoreline Change Atlas of the UT of Puducherry**’.

4.3 Himalayas are home to more than one-third of all types of rhododendrons

In news- The latest publication of the Botanical Survey of India (BSI) has revealed that **Darjeeling and Sikkim Himalayas are home to more than one-third of all types of rhododendrons found in India.**

Key highlights-

- The publication titled ‘Rhododendrons of Sikkim and Darjeeling Himalaya- An Illustrated Account’ **lists 45 taxa of rhododendrons (36 species, 1 subspecies, 1 variety, and 7 natural hybrids).**
- There are 132 taxa (80 species, 25 subspecies and 27 varieties) of rhododendrons found in India. Of the 45 taxa recorded in the publication, 24 are found in the Darjeeling Himalayas and 44 in the Sikkim Himalayas.
- **Darjeeling and Sikkim Himalayas comprise only 0.3% of India’s geographical area but the region is home to one-third (34%) of all Rhododendron types.**
- **Of the 45 taxa documented by BSI, five are facing a high threat** due to anthropological pressures and climate change, according to scientists.
- The **Rhododendron edgeworthii**, with white campanulate flowers, **recorded a huge habitat decline** in both Darjeeling and Sikkim.
- **Rhododendron niveum**, with big purple flowers, found in the Lachung area of north Sikkim is facing **threats due to rampant constructions.** Rhododendron baileyi, Rhododendron lindleyi and Rhododendron maddenii are also threatened.

About Rhododendrons-

- Rhododendron, meaning rose tree in Greek, is considered an indicator species for climate change.
- The flowering season for rhododendrons starts in March and continues till May. However, recently, flowering was found to begin as early as January for some species.
- This is an indication that those areas are getting warmer and the phenology of rhododendrons can be an important indicator of climate change.
- Rhododendrons were first recorded by Captain Hardwick in Jammu and Kashmir in 1776 where he spotted the Rhododendron arboreum.
- However, it was a visit by the British botanist Joseph D. Hooker to Sikkim between 1848 and 1850 that revealed the rhododendron wealth of the Sikkim and Darjeeling Himalayas.
- The first species of Rhododendron from northeast India — Rhododendron dalhousiae was reported from Sikkim by Hooker in 1848 in his book ‘The Rhododendrons of Sikkim Himalayas’.

4.4 XDI Gross Domestic Climate Risk

In news- Gross Domestic Climate Risk, “world-first” index that assesses the risk posed to the built environment across the world due to extreme weather events, has been released by the Cross Dependency Initiative (XDI) recently.

About the report/index-

- **The index calculated the ‘physical climate risk’ to built environments** such as buildings and properties across 2,600 States and provinces globally in 2050.
- **Physical risk refers to vulnerability from eight climate change events:** heat waves, coastal flooding (and sea level rise), extreme wind, forest fire, soil movement (or other drought-related hazards), free thaw, riverine and surface flooding.
- The report **compared the risk across territories based on modelled projections of damage**, using global climate models, local weather and environmental data.
- Together, **the index assigned an Aggregated Damage Ratio (ADR) to each region**, which signifies the total amount of damage a region’s built environment would sustain in 2050.
- A high ADR signifies more peril.
- This is the first time there has been a physical climate risk analysis focused exclusively on the built environment, comparing every state, province and territory in the world.
- **The Gross Domestic Climate Risk analysis focuses on the extent of capital value at risk from extreme weather and climate change in states, provinces and other territories**, represented by vulnerability and exposure of the built environment.
- **The Cross Dependency Initiative (XDI) is a global organisation specialising in climate risk analysis for regions**, banks and companies.
- Now, for the first time, the finance industry can directly compare Mumbai, New York and Berlin using a like-for-like methodology.
- **The report’s modelling is conducted under the Intergovernmental Panel on Climate Change’s RCP 8.5 scenario** – a scenario projecting high emissions, consistent with average global warming over 3 degree C above pre-industrial temperatures by the end of the century.

Key findings of the index-

- Overall, India, China and the U.S, globally significant states are home to 80% of the most vulnerable cities and centres of economic activity around the world.
- Two of China’s largest sub-national economies, Jiangsu and Shandong top the global ranking; followed by the U.S. which has 18 regions in the top 100 list; including economically-important regions of Florida, Texas and California.
- Asia dominates the list largely, with 114 of the top 200 regions falling in the continent, with the mention of Pakistan, Indonesia and most Southeast Asian countries.
- The most damage posed to built infrastructure globally is caused by riverine and surface flooding or flooding combined with coastal inundation.

About India-

- It shows that 14 Indian states are set to remain within the top 100 most climate-risk-prone territories of the world by 2050.
- **Punjab, Bihar, Uttar Pradesh, Assam, Rajasthan, Tamil Nadu, Maharashtra, Gujarat and Kerala** fall in top 50 as India has 9 states as **most disturbed on the count**.
- According to the report, Assam, Bihar and Tamil Nadu had the highest ADR among other Indian States.
- Madhya Pradesh, West Bengal, Haryana, Karnataka and Andhra Pradesh are other Indian states remaining within the top 100 most climate vulnerable regions.
- Assam, in particular, would witness the maximum increase of climate risk: rising up to 330% by 2050 as compared to 1990.

Note:

- The Climate Risk Index in 2019, which ranked countries based on their vulnerability to fatalities and economic losses, found India to be the seventh-worst hit due to extreme weather events.

4.5 Sagar Parikrama Phase-III

In news- The Union Minister of Fisheries, Animal Husbandry and Dairying launched the Sagar Parikrama Phase-III from Hazira Port, Gujarat.

About Sagar Parikrama Phase-III-

- Sagar Parikrama is a program that reflects the far-reaching policy strategy of the government leading to the direct interaction with fishers and fish farmers to understand the issues of coastal areas and problems related to fishermen.
- Phase I&II have brought initiation of Artificial Reefs and Sea Ranching, among many other innumerable benefits.
- The main objectives of 'Sagar Parikrama' are
- To facilitate interaction with fishermen, coastal communities and stakeholders so as to disseminate information of various fisheries related schemes and programs being implemented by the Government.
- Demonstrating solidarity with all fisher folk, fish farmers and concerned stakeholder as a spirit of Aatmanirbhar Bharat.
- To promote responsible fisheries with focus on sustainable balance between the utilization of marine fisheries resources for the food security of nations and livelihoods of coastal fisher communities.
- Protection of marine ecosystems.
- Phase I Programme of 'Sagar Parikrama' was organized in Gujarat, started on 5th March, 2022 from Mandvi and ended on 6th March 2022 at Porbandar, Gujarat.
- Phase II The voyage Sagar Parikrama as Phase –II programme started on 22nd September 2022 from Mangrol to Veraval and ended at Mul Dwarka, on 23rd September 2022 from Mul Dwarka to Madhwad.
- Phase III Program of 'Sagar Parikrama' ended on 21st Feb 2023 at Sassoon Dock, Mumbai.
- Sagar Parikrama program is celebrated in all coastal States/UTs and to improve the quality of life and economic well-being of fisheries and fishermen in rural areas and to create more livelihood opportunities, a holistic approach has been adopted.

4.6 First FAO Global assessment of Soil Carbon in Grasslands

In news- Food and Agriculture Organization of the United Nations (FAO) has published its first Global Assessment of Soil Carbon in Grasslands.

About FAO assessment-

- **It measured the baseline of stocks of Soil Organic Carbon (SOC)** the carbon held within the soil that is measurable, expressed as a percentage by weight (gC/Kg soil)— in both semi-natural and managed grasslands and estimated their potential of SOC sequestration.
- **The study found that if the SOC content in the 0–30 cm depth layer of available grasslands increased by 0.3 per cent after 20 years** of the application of management practices that enhance soil organic carbon sequestration, 0.3 tonnes C/ha per year could be sequestered.
- **The Livestock Environmental Assessment and Performance Partnership (FAO LEAP Partnership) funded this study** to illustrate the state of soil carbon stocks in grassland systems and their potential to sequester carbon in the soil.
- **Soils can act as both sources and sinks of carbon, and many grasslands, which contain approximately 20 percent of the world's SOC,** have suffered losses because of human activities such as intensive livestock grazing, agricultural activities and other land-use activities.

- According to the report, **most of the world's grasslands have a positive carbon balance**, meaning the land is stable or well-maintained.
- However, **negative carbon balance was found in East Asia, Central and South America**, and Africa south of the Equator, meaning these stocks are likely to be decreasing due to anthropogenic stresses combined with climatic conditions.
- This trend, however, could be reversed by stimulating plant growth, capturing carbon in the soil, and protecting carbon in highly organic soils, such as semi-natural (non-human managed) grasslands.
- In livestock management, this could also mean implementing rotational, planned or adaptive grazing measures for animals.
- The report also explores other possible measures to improve SOC stocks through case studies, such as the establishment of fodder gardens in eastern African Countries.
- The study points out that the lack of incentives for farmers to improve management practices, and the current difficulty in accurately monitoring SOC stocks and changes are the main reasons that SOCs are not being included in the national climate plans known as National Determined Contributions (NDCs), which are at the heart of the Paris Agreement.
- FAO emphasizes that there is a need to balance the benefits of animal-source foods and livestock keeping for nutrition, health, livelihoods, and well-being, with the urgent need to reduce greenhouse gas emissions to tackle the climate crisis, which also threatens food security.

Note:

- Soil organic carbon is a measurable component of soil organic matter.
- 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.
- Organic matter contributes to nutrient retention and turnover, soil structure, moisture retention and availability, degradation of pollutants, and carbon sequestration.

4.7 World Sustainable Development Summit

In news- The 22nd edition of the annual flagship event of The Energy and Resources Institute (TERI) – the World Sustainable Development Summit (WSDS) was held from 22-24 February 2023 in New Delhi.

About the WSDS-

- The Summit is **TERI's annual flagship multistakeholder event** and is the **only independently convened event of such scale in the Global South** that brings together world leaders, thinkers, scientists, industry and government representatives to work towards long-term solutions for the planet's health.
- WSDS brings together political leaders, decision-makers from bilateral and multilateral institutions, business leaders, high-level functionaries from the diplomatic corps, scientists and researchers, media personnel, and members of civil society on a common platform.
- **Theme for 2023:** Mainstreaming Sustainable Development and Climate Resilience for Collective Action.
- During the valedictory session of WSDS 2022, the Act4Earth initiative was launched.

About TERI-

- TERI is an independent, multi-dimensional organization, with expertise in research, policy, consultancy and implementation based in New Delhi that specializes in the fields of energy, environment and sustainable development.
- Established in 1974, it was formerly known as the Tata Energy Research Institute and was renamed The Energy and Resources Institute in 2003.
- The scope of the organisation's activities includes climate change, energy efficiency, renewable energy, biotechnology, and social transformation.
- Its activities include:
 - World Sustainable Development Summit (WSDS).

- LaBL (Lighting a Billion Lives) - An initiative to provide clean lighting access to bottom of the pyramid communities.
- Green Olympiad - Conducted in association with MoEF, it is an international environment examination that is annually organized for middle and high-school students.
- TERI has regional centres and campuses in Gurugram, Bengaluru, Guwahati, Mumbai, Panaji, and Nainital.

5. FOREIGN AFFAIRS

5.1 UN Commission for Social Development

In news- India's Ruchira Kamboj (Permanent Representative of India to the UN, Ambassador) has been elected as the Chair of the 62nd Session of the UN Commission for Social Development recently.

Key updates-

- For the 62nd session, the priority theme is "Fostering Social Development and Social Justice through Social Policies to accelerate Progress on the Implementation of the 2030 Agenda for Sustainable Development and to achieve the overarching goal of poverty eradication."
- "The theme underlines an intrinsic and important connection between social development and social justice as fundamentals to achieving the SDGs.
- Along with India as the Chair, the commission also elected Jon Ivanovski (North Macedonia), Carla María Carlson (Dominican Republic), and Thomas Lammar (Luxembourg) as Vice-Chairs of the 62nd session.
- The **Chair of the 61st session of the commission was Alya Ahmed bin Saif Al-Thani, Ambassador and Permanent Representative of Qatar.**

About the UN Commission for Social Development-

- It is one of the key commissions tasked with monitoring and carrying out the **Copenhagen Declaration and Programme of Action.**
- **It was established by the Economic and Social Council (ECOSOC)**, one of the six main organs of the United Nations.
- The commission's goal is to advise the ECOSOC, particularly on those social issues that are not dealt with by specialized intergovernmental organisations.
- **Members:** Originally 18, now stands at **46.**
- Members are elected by ECOSOC based on equitable geographical distribution (as noted in the following list) for four-year terms.
- Since the World Summit for Social Development in Copenhagen in 1995, the Commission for Social Development (CSocD) has been the key United Nations body in charge of the follow up and implementation of the Copenhagen Declaration and Programme of Action.
- Originally known as the Social Commission but renamed in 1966.

5.2 Seattle bans caste discrimination

In news- Seattle became the first US city to outlaw caste discrimination, after its local council voted to add caste to the city's anti-discrimination laws.

About the law-

- The legislation banning caste-based discrimination will prohibit businesses from discriminating based on caste with respect to hiring, tenure, promotion, workplace conditions, or wages.
- It will ban discrimination based on caste in places of public accommodation, such as hotels, public transportation, public restrooms, or retail establishments.

- The law will also prohibit housing discrimination based on caste in rental housing leases, property sales, and mortgage loans.
- Basically, the legislation will recognise caste as a unique basis of discrimination, similar to race or gender.
- The resolution was moved by Kshama Sawant, Seattle City council member and upper-caste Hindu, and was approved by the Council by six to one vote.
- This move has set a precedent for other cities also adopting such laws in the future.

6. GEOGRAPHY

6.1 GSI has established “inferred” lithium resources in J&K

In news- Recently, the Geological Survey of India (GSI) has established “inferred” lithium resources of 5.9 million tonnes in **Salal-Haimana area of Reasi District of Jammu and Kashmir**.

Key updates-

- These resources have been established as part of the “Reasi Sersandu-Kherikot-Rahotkot-Darabi” mineral block, where prospecting has been ongoing since 2021-22.
- Under the United Nations Framework for Classification for Reserves and Resources of Solid Fuels and Mineral Commodities (UNFC 1997), the stage of prospecting is categorised as ‘G4’ when it entails reconnaissance surveys — a fairly advanced stage of prospecting.
- The finds in this case are learnt to include bauxite (the ore for aluminium) and rare earth elements, alongside lithium.
- There are two caveats with the latest lithium find: first, the new find is categorised as “inferred” — one of three categories that mineral resources are subdivided into, in order of increasing geological confidence.
- The “inferred” mineral resource is the part of a resource for which quantity, grade and mineral content are estimated only with a low level of confidence based on information gathered from locations such as outcrops, trenches, pits, workings and drill holes that may be of limited or uncertain quality, and also of lower reliability from geological evidence.
- Second, the lithium find in J&K, in inferred terms, is also comparatively small, considering that proven reserves in Bolivia are 21 million tonnes, 17 million tonnes in Argentina, 6.3 million tonnes in Australia, and 4.5 million tonnes in China.
- Currently, India is almost entirely dependent on import of these cells, China being the major source of both the raw material and cells.
- The GSI takes up different stages of mineral exploration —
 - Reconnaissance surveys (G4).
 - Preliminary exploration (G3), and
 - General exploration (G2) as per the guidelines of UNFC and the Minerals (Evidence of Mineral Contents) Amendment Rules, 2021 (Amended MMDR Act 2021) for augmenting mineral resources for various mineral commodities, including lithium.

About Lithium-

- Lithium (Li), chemical element of Group 1 (1a) in the periodic table, the alkali metal group, lightest of the solid elements.
- The metal itself which is soft, white, and lustrous and several of its alloys and compounds are produced on an industrial scale.
- The principal industrial applications for lithium metal are in metallurgy, where the active element is used as a scavenger (remover of impurities) in the refining of such metals as iron, nickel, copper, and zinc and their alloys.
- A large variety of nonmetallic elements are scavenged by lithium, including oxygen, hydrogen, nitrogen, carbon, sulphur, and the halogens.

- A lithium-ion (Li-ion) battery is an advanced battery technology that uses lithium ions as a key component of its electrochemistry.
- It is also extensively used in the production of other organic chemicals, especially pharmaceuticals.
- With 8 million tons, **Chile has the world's largest known lithium reserves**, ahead of Australia, Argentina and China.
- **Lithium can be extracted in different ways, depending on the type of the deposit** — generally either through solar evaporation of large brine pools, or from hard-rock extraction of the ore.
- **In India, there is some potential to recover lithium from brines of Sambhar and Pachpadra areas in Rajasthan, and Rann of Kutch, Gujarat.**
- The major mica belts located in **Rajasthan, Bihar and Andhra Pradesh** and the pegmatite belts in **Odisha, Chhattisgarh, alongside rock mining being undertaken at Mandya, Karnataka, are other potential geological domains of the country.**
- This is part of a concerted domestic exploration push for the alkali metal — a vital ingredient of the Lithium-ion rechargeable batteries that power electric vehicles (EVs), laptops and mobile phones.
- The Atomic Minerals Directorate for Exploration and Research (AMD), an arm of the Department of Atomic Energy, had earlier conducted preliminary surveys that had shown the presence of lithium resources of 1,600 tonnes in the igneous rocks of the Marlagalla–Allapatna region of Karnataka's Mandya district.

6.2 Diyodar meteorite was India's first aubrite in 170 years

In news- Meteorite streaked over India in August, 2022, over two villages in Banaskantha, Gujarat was India's first aubrite in 170 years. The pieces that fell in the two villages have been dubbed the Diyodar meteorite, after the taluka in which the villages are located.

About Diyodar meteorite

- Analysis by a group of scientists at the Physical Research Laboratory (PRL), Ahmedabad, has revealed that this **meteorite is a "rare, unique specimen" of aubrite.**
- India has been the site of hundreds of meteorite crashes, **but this is only the second recorded crash of an aubrite. The last was on December 2, 1852, in Basti, Uttar Pradesh.**
- **Around 90% of the meteorite was composed of orthopyroxene** and the pyroxene didn't contain any iron but was rich in magnesium.
- **Pyroxenes are silicates consisting of single chains of silica tetrahedra (SiO₄);** orthopyroxenes are pyroxenes with a certain structure.
- Rocks with pyroxene have also been used to make crushed stone that is used in construction.
- **Worldwide, aubrites have crashed in at least 12 locations since 1836,** including three in Africa and six in the U.S.
- Aubrites "are coarse-grained igneous rocks that formed in oxygen-poor conditions", and thus contain a variety of exotic minerals that are not found on Earth. E.g. The mineral heideite was first described in the Basti meteorite.
- **Meteors are pieces of some solid object in space that broke away, descended onto a planet or moon,** and once they managed to reach the surface, **are called meteorites.**
- **Aubrites are a type of meteorite;** scientists are not yet sure of their origin, although some signs indicate that they could be from the asteroid 3103 Eger or from the planet Mercury.
- The conditions in which aubrites form are prevalent on the surface of **planet Mercury.**

6.3 Ring around a dwarf planet

In news- Astronomers have found a ring around a dwarf planet, located in the Kuiper Belt at the solar system's edge, called Quaoar.

Key findings-

- According to the study 'A dense ring of the trans-Neptunian object Quaoar outside its Roche limit', the ring lies far away from the Roche limit, a mathematically determined distance beyond which rings aren't supposed to exist.
- However, it is positioned much further away from the planet than is usual and defies theoretical explanations.
- With an estimated radius of 555 km, Quaoar is roughly half the size of Pluto and orbits beyond Neptune.
- It also has a moon of its own, which is known as Weywot.
- As the dwarf planet is too small and too distant to be observed directly, the researchers detected the ring with the help of a phenomenon called stellar occultation.
- A stellar occultation occurs when, as seen from Earth, a bright star passes behind a planet.
- This allows astronomers or anybody on Earth to observe the sharp silhouette of the planet for a brief period of time.
- The phenomenon, which rarely occurs, is used by researchers to analyse a planet's atmosphere and determine if it has a ring around it — in 1977, scientists discovered the Uranian ring system with the help of stellar occultation.

What is the reason behind Quaoar's far-out ring?

- The researchers of the study have said that there can be a variety of possible explanations but they aren't sure about any one of them.
- It might be possible that Quaoar's moon, Weywot, or some other unseen moon contributes gravity that somehow holds the ring stable.
- Another potential explanation can be that the particles of the ring are colliding with each other in such a way that they are avoiding to coalesce into a moon.

6.4 Driving Holistic Action for Urban Rivers (DHARA)

In news- DHARA, the annual meeting of members of the River Cities Alliance was held in Pune recently.

About DHARA-

- It is the annual meeting of the members of the River Cities Alliance (RCA) organised by the National Mission for Clean Ganga (NMCG) in association with National Institute of Urban Affairs (NIUA).
- The event has strong synergies with the Urban20 (U20) initiative under the ambit of India's G20 Presidency.
- One of the thrust areas of U20 is to promulgate urban water security.

What is River Cities Alliance (RCA)?

- RCA started with 30 cities in 2021 and currently has 95 cities as members across India.
- It is a dedicated platform for river cities in India to ideate, discuss and exchange information for sustainable management of urban rivers.
- River Cities Alliance, is the first-of-its-kind Alliance in the world.
- It symbolizes the successful partnership of the **two Ministries i.e., Ministry of Jal Shakti and Ministry of Housing and Urban Affairs.**
- The Alliance focuses on **three broad themes-** Networking, Capacity Building and Technical Support.
- **The 30 member cities include** Haridwar, Rishikesh, Kanpur, Ayodhya, Patna, Howrah, Ayodhya, Varanasi, Prayagraj, etc. from Ganga basin states and **Aurangabad, Chennai, Hyderabad, Bhubaneswar, Pune, Udaipur, Vijayawada, etc. from non-Ganga basin states.**

6.5 Dark Galaxy

In news- A team of researchers from Italy has been able to detect Black/ Dark galaxy using the Atacama Large Millimetre/Submillimetre Array (ALMA).

About Dark galaxy-

- A dark galaxy is a hypothesized galaxy with no, or very few, stars.
- They received their name because **they have no visible stars, but may be detectable if they contain significant amounts of gas.**
- The team revealed that it is **compact, and containing large quantities of interstellar dust**, it is a young galaxy, forming stars at about 1000 times the rate of the Milky Way.
- Astronomers have long theorized the existence of dark galaxies, but there are no confirmed examples to date.
- **Dark galaxies are distinct from intergalactic gas clouds caused by galactic tidal interactions**, since these gas clouds do not contain dark matter, so they do not technically qualify as galaxies.
- Distinguishing between intergalactic gas clouds and galaxies is difficult; most candidate dark galaxies turn out to be tidal gas clouds.

What is Atacama Large Millimetre/Submillimeter Array (ALMA)?

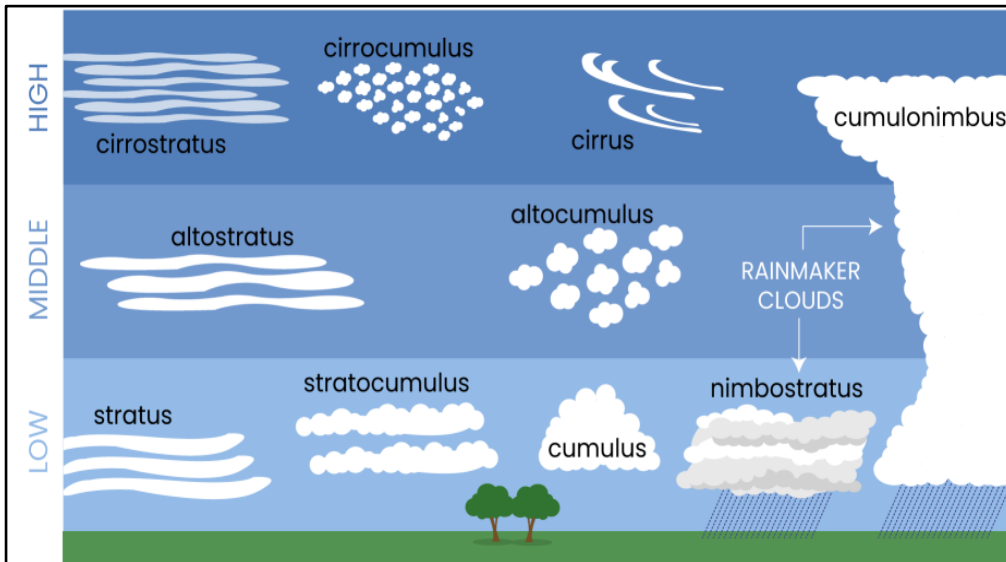
- ALMA is an astronomical interferometer of 66 radio telescopes in the Atacama Desert of northern Chile, which observe electromagnetic radiation at millimeter and submillimeter wavelengths.
- The array has been constructed on the 5,000 m (16,000 ft) elevation Chajnantor plateau - near the Llano de Chajnantor Observatory and the Atacama Pathfinder Experiment.
- This location was chosen for its high elevation and low humidity, factors which are crucial to reduce noise and decrease signal attenuation due to Earth's atmosphere.
- ALMA provides insight on star birth during the early Stelliferous era and detailed imaging of local star and planet formation.
- ALMA is an international partnership amongst Europe, the United States, Canada, Japan, South Korea, Taiwan, and Chile.
- Costing about US\$1.4 billion, it is the most expensive ground-based telescope in operation.
- ALMA began scientific observations in the second half of 2011 and the first images were released to the press on 3 October 2011.
- The array has been fully operational since March 2013.

6.6 Mammatus Clouds

In news- NASA has released a picture of Mammatus clouds and termed it as 'Astronomy Picture of the Day' on February 12 2023.

What are Mammatus Clouds?

- Mammatus clouds are among the most extraordinary and easily recognizable cloud formations, with a **pattern of protuberances or sacs extending from the base of the cloud.**
- The shapes of mammatus formations can vary greatly; they can range from the typical **bulging shape to a more elongated tube dangling from the cloud above.**
- **These clouds generally appear in connection with substantial cumulonimbus clouds.**
- The **turbulence within the cumulonimbus often leads to the formation of Mammatus clouds**, particularly on the bottom of the projecting anvil as it quickly descends to lower altitudes.
- This breaks from the conventional upward growth process of cloud formation, resulting in an irregular cloud base.
- These clouds usually emerge in association with Cumulonimbus clouds, which bring thunderstorms due to their massive quantity of unstable air.



Note:

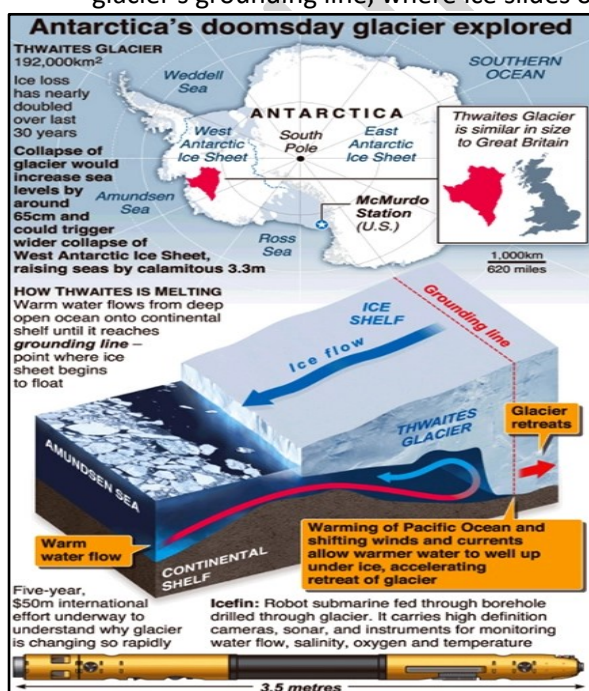
Astronomy Picture of the Day is a website provided by NASA and Michigan Technological University. According to the website, each day a different image or photograph of our universe is featured, along with a brief explanation written by a professional astronomer.

6.7 Thwaites Glacier

In news- Scientists studying Antarctica's vast Thwaites Glacier said that the warm water is seeping into its weak spots, worsening melting caused by rising temperatures.

Key findings-

- Thwaites, which is roughly the size of Florida, represents more than half a meter (1.6 feet) of global sea level rise potential, and could destabilise neighbouring glaciers that have the potential to cause a further three-meter (9.8-foot) rise.
- Using an underwater robot vehicle known as Icefin, mooring data and sensors, they monitored the glacier's grounding line, where ice slides off the glacier and meets the ocean for the first time.



About Thwaites Glacier-

- Thwaites Glacier, nicknamed the Doomsday Glacier, is an unusually broad and vast Antarctic glacier flowing into Pine Island Bay, part of the Amundsen Sea, east of Mount Murphy, on the Walgreen Coast of Marie Byrd Land.
- Thwaites Glacier is closely monitored for its potential to raise sea levels.
- Along with the Pine Island Glacier, it has been described as part of the "weak underbelly" of the West Antarctic Ice Sheet, because of its apparent vulnerability to significant retreat.

6.8 Six extraordinarily massive first-generation galaxies discovered

In news- According to a new study, James Webb Space Telescope (JWST) has discovered six extraordinarily massive first-generation galaxies, formed roughly 500-700 million years after the Big Bang.

Key findings-

- The study said that **these galaxies challenge current understanding of galaxy formation** as they should not have existed so early in their life.
- The study has revealed that **tens to hundreds of billions of sun-sized stars' worth of mass is formed in only five per cent of the time.**
- **The shapes of these galaxies are weird despite having the same mass as the Milky Way.**
- The team of scientists spotted these monster galaxies using the Cosmic Evolution Early 44 Release Science programme of JWST.
- The galaxies are in the same area in the sky but are not close to each other in three-dimensional space.
- **The stars appeared as bright and red "fuzzy dots"**. Red light typically means it is old.
- Alternatively, the light could be coming from faint quasars, which are short for quasi-stellar radio sources.
- **A quasar is an intense beacon of light coming from the centre of some galaxies and is powered by supermassive black.**
- The researchers plan to split the light of each of these galaxies into its rainbow-like fingerprint using spectroscopy.
- **Hubble space telescope first observed this region in the 1990s.**

7. GOVERNANCE

7.1 Khanan Prahari app

In news- The government of India has launched a mobile app namely 'Khanan Prahari' and a web app Coal Mine Surveillance and Management System (CMSMS).

About Khanan Prahari & CMSMS-

- **Khanan Prahari** is a **Mobile App of Ministry of Coal** for Reporting Illegal Coal Mining and a tool for reporting any illegal coal mining incident through geo-tagged photographs as well as textual information by any citizen from the place of incidence.
- The reported incidents will be analyzed & suitable action will be taken by concerned authorities.
- The action taken can be viewed on the CMSMS website.
- **CMSMS has been developed to curb illegal mining and take transparent action as an e-Governance initiative** of the government on the use of Space Technology.
- **The objective of development and launching of this CMSMS application was to detect citizens' participation against illegal mining** by receipt of citizen's complaints through mobile app – KhananPrahari

and to monitor and take action on any kind of illegal coal mining activity being carried out within the leasehold boundaries of any Coal Mining Project in the Coalfield Areas.

- **There are two ways in which illegal coal mining is reported/ identified through CMSMS:** Through periodic scanning of Satellite imagery (In house) and Through mobile app “Khanan Prahari” (Public)
- **Any person/ group/ organisation with a smartphone can report the incident through the mobile app “Khanan Prahari”.**

7.2 mPassport Police App

In news- In a bid to reduce the time taken for police verification of persons applying for passports in the national capital of Delhi, the Ministry of External Affairs has introduced the ‘mPassport Police App’.

About the app-

- It digitizes the process of sending the police verification report to the Regional Passport Office.
- **The Ministry also dedicated 350 mobile tablets to the personnel of the Special Branch of Delhi Police,** which prepares and sends the police verification report to the passport office.

How was police verification done previously?

- The process would be cumbersome and involve hard copies of a passport application making their way through the bureaucracy.
- Applications would go from the passport office to the Delhi Police Bhawan. They then would be distributed to the Special Branch’s Inspectors in each district, who would hand them over to an enquiry officer.
- **Enquiry officers, mostly Assistant Sub-Inspector level officers, are the ones who actually carry out the verification** by visiting the address of an applicant and sending back the police verification report to the ACP of each district, who then attests and sends it to the passport office for further processing.
- Earlier, the maximum time period to carry out the police verification and send it back to the regional passport office was 15 days and that the new facility will substantially reduce this.

8. HISTORY

8.1 What is Dhamaal?

In news- Recently, a new documentary has focused on the music and dance performances of the community in Gujarat, called Dhamaals.

About Dhamaals

- Dhamaal is a mix of Sufi and African (mostly East African) musical and dance traditions.
- It refers particularly to the spiritual practices of the Siddis of Gujarat.
- The Siddis begin almost every Dhamaal song by blowing into a conch shell.
- This is often followed by the slow playing of East African percussion instruments like the musindo and the slow thumping of feet that marks the onset of the singing and dancing Dhamaals.
- The ritual of foot thumping is a crucial part of spiritual East African dance and musical traditions.
- The Siddis are followers of Islam and arrived in India from Muslim communities in East and Central Africa.
- Dhamaals are performed in memory of their spiritual leaders, among them Bava Gor, Mai Misra, Baba Habash and Sidi Nabi Sultan.
- According to Siddi folklore they arrived from Ethiopia through the Nubian Valley, Syria and the Indian Ocean to the coast of Kuda in the Bhavnagar district of Gujarat.
- Usually, Dhamaal songs and dances are performed to celebrate the anniversary of the birth and death of spiritual leaders.

- They are performed in two ways —
 1. Dance Dhamaal and
 2. Baithaaki Dhamaal.
- The Baithaaki Dhamaal is performed in the sitting position and the Dance Dhamaal is performed in both sitting and dance positions.
- During the performance of Baithaaki Dhamaal the focus is more on the lyrics and less on the musical instruments and in **Dance Dhamaal the focus is more on the sounds of the instruments.**
- **The spiritual songs** that are sung during the Dhamaals are **known as zikrs** through the **Swahili Creole language.**
- Historically, **the Swahili Creole language in India emerged among the Siddis** through the mixing of Kiswahili from East Africa with Gujarati, Hindi and Urdu languages from India.
- **Zikr is sung in the praise of Siddi spiritual leader Nabi Sultan**, believed to have arrived in Gujarat from the Nubian Valley.
- **The zikr means that with the blessings of Nabi Sultan no evil can befall the Siddis of Gujarat.**
- The musical instruments used to perform the zikrs are East African **percussion instruments.** They are:
 1. The musindo, for example, is a cylinder-shaped, two-sided drum from Kenya.
 2. The misr kanga is a small, funnel-shaped instrument from Ethiopia, containing small stones.
 3. The mugarman is a large, cylinder-shaped, one-sided drum from Tanzania.
- These are played along with traditional Indian musical instruments. These include the harmonium (a keyboard instrument) and the dholak (a two-headed hand drum).
- The intermingling of Indian and African musical instruments generates creole rhythms which are traditionally African and Indian at the same time.
- The Siddis follow many spiritual aspects of the Sufi tradition.

About Siddi Tribe-

- The Siddi also known as Sidi, Siddhi, Sheedi or Habshi, Afro-Indians.
- They are descended from the Bantu peoples of the East African region.
- It is believed that they are of African origin because they clearly show the Negroid racial strain in their physical features.
- They are primarily Muslims, although some are Hindus and others belong to the Catholic Church.

8.2 Aljamea-tus-Saifiyah of Dawoodi Bohra community

In news- The Prime Minister Narendra Modi inaugurated the campus of the Aljamea-tus-Saifiyah, an Arabic academy of the community recently.

About the campus-

- Also known as Jamea, this is an academic institute exclusively catering to the education of young boys and girls from the Dawoodi Bohra community, a Shiite denomination spread across the world.
- While the academy's focus will primarily be on spiritual and religious studies, the academy will also provide its students with mainstream education in association with an internationally recognised school board curriculum.
- The Mumbai campus is the second such campus in India.
- The first one was established over two centuries ago in 1810 in Surat, a town which is the home to a large Bohra population.
- The Mumbai campus also has separate hostels for boys and girls, faculty residences, a multi-storey administration and classroom building, a library, dining halls, prayer halls and a building dedicated to teaching of Holy Quran.
- The prayer area is inspired by the al-Jāmi' al-Azhar in Cairo, the original location of the Al Azhar University, one of the oldest extant universities in the world.
- Globally this will be the fourth campus of the Jamea after Surat (1810), Karachi (1983) and Nairobi (2017).

The Dawoodi Bohra community-

- The Dawoodi Bohras are Shia Muslims whose leader is known as the Al-Dai-Al-Mutlaq and there are around 1 million Dawoodi Bohras spread around the world.
- Their largest numbers reside in India, Pakistan, Yemen, East Africa, and the Middle East, with a growing presence across Europe, North America, South East Asia, and Australia.
- They are known to be a close-knit community who, like all Muslims, follow the tenets of Islam; namely reciting the Quran, observing the five daily prayers, fasting during the month of Ramadan, performing the pilgrimages of Hajj and Umrah and offering Zakat.
- Whilst adherence to traditional values is important for the community, they are also known for their mercantilism and having a modernist approach to their lifestyles.
- The cultural heritage of this denomination is found in the traditions of the Fatimid Imams; direct descendants of the Islamic prophet Muhammad through his daughter Fatima.
- The Fatimids ruled over North Africa between 10th and 11th century CE.
- Mostly self-reliant, the Bohras are typically traders, businesspersons, and entrepreneurs. The word "Bohra", in fact, comes from the Gujarati word vohrvu or vyavahar, meaning "to trade".
- For over 400 years, the leader of the community has been based in India, including the current and the 53rd leader, His Holiness Dr Syedna Mufaddal Saifuddin.
- The leader of the community is recognised by the members as having the right to excommunicate its members.
- In practical terms, excommunication means not being allowed to access a mosque belonging to the community or a burial dedicated to the community.

8.3 Sangam age pushed to 800 BCE

In news- In the latest development, the Sangam age has been pushed to 800 BCE based on the archaeological findings in Keladi along the Vaigai river, about 13 km from Madurai.

Key findings-

- **K. Amarnath Ramakrishna, who discovered Keeladi** and led the first two seasons of excavations between 2014 and 2016, submitted his 982-page report to ASI Director recently.
- Based on the results of stratigraphy of the cultural deposits found in the first two phases, the period of the Sangam era archaeological site has been placed between 8th century BCE to 3rd century CE.
- **Sangam age was believed to be between 300 BCE to 300 CE.**
- The new report repositions the Sangam age between 800 BCE and 300 CE.
- Even this period of history has been **classified into three periods.**
 - The pre-early historic period between 800 BCE to 500 BCE.
 - Mature early history between 500 BCE to the end of 1st century BCE and
 - Post early history from 1st century BCE to 300 CE.
- The fertile nature of the area and cattle rearing played a crucial role in its evolution paving the way for excess production of rice and sea trading of the inhabitants.
- About 5,800 artefacts were unearthed at Keeladi during the first two phases of excavation.
- In 2017, the Tamil Nadu State Department of Archaeology took over the excavations and thousands of artefacts continue to be unearthed at the site confirming the rich urban life of the ancient Tamils.
- In 2019, the Tamil Nadu State Department of Archaeology (TNSDA), in a report, stated that the cultural deposits unearthed during (fourth phase) excavations could be safely dated to a period between 6th century BCE and 1st century BCE, about 300 years earlier than previously believed - 3rd century BCE.
- Now, the ASI report, which studied only 2% of the site, has further pushed the Sangam age to 800 BCE.

The Sangam age-

- The Sangam period or age, particularly referring to the third Sangam period, is the period of the history of ancient Tamil Nadu, Kerala and parts of Sri Lanka dating back to c. 3rd century CE.

- It was named after the mythical and legendary Sangam academies of poets and scholars centered in the city of Madurai.
- In Old Tamil language, the term Tamilakam referred to the whole of the ancient Tamil-speaking area, corresponding roughly to the area known as southern India today, consisting of the territories of the present-day Indian states of Tamil Nadu, Kerala, parts of Andhra Pradesh, parts of Karnataka and northern Sri Lanka also known as Eelam.
- According to Tamil legends, there were three Sangam periods, namely Head Sangam, Middle Sangam and Last Sangam period.
- Historians use the term Sangam period to refer to the last of these, with the first two being legendary.
- The Sangam literature is thought to have been produced in three Sangam academies of each period.
- Between 600 BCE to 300 CE, Tamilakam was ruled by the three Tamil dynasties of Pandya, Chola and Chera, and a few independent chieftains, the Velir.

8.4 Dickinsonia

Recent updates (February 2023)

- A 550-million-year-old alleged fossil discovered near Bhopal in 2021 and thought to be of the extinct “Dickinsonia” – among the earliest living organisms on earth has turned out to be the impression of a decayed beehive in a case of “misidentification”.
- After an initial phase of controversy, whether it is an animal or a plant, it was classified as an animal after the discovery of cholesterol molecules in the fossils.
- Being the first and only “Dickinsonia” find in India, the research article by Ratlack and his team attracted worldwide attention.
- Dickinsonia is found on ocean floors around the present day’s Australia, China, Russia, Ukraine, in the Ediacaran period, about 500 to 600 million years ago.

8.5 200th birth anniversary of Dayanand Saraswati

In news- Prime Minister of India paid tribute to Dayanand Saraswati on the 200th birth anniversary.

A brief history of Dayanand Saraswati-

- Dayanand Saraswati (1824-1883) was one of the most influential figures of 19th-century India.
- A **believer in the supreme authority of the vedas, he established the Arya Samaj in 1875**, leading a reform movement within orthodox Hinduism.
- Among his various beliefs included a **rejection of idolatry and the overly ritualistic traditions of Hinduism**, support for women’s education, denunciation of child marriage and an opposition to untouchability.
- **His magnum opus, Satyarth Prakash (1875), emphasised the “return to Vedic principles”** that Dayanand Saraswati believed “had been lost” over time.
- A reason for the success of Christian missionaries in the Indian subcontinent was the nature of native culture and belief systems at the time.
- As Dayanand Saraswati himself put it, over the centuries, Hindus had moved away from the teachings and traditions of the Vedas, which were the source of the “ultimate truth” in the world.
- This **departure from the true Sanatan Dharma (what he referred Vedic religion as) resulted in practices such as idolatry, untouchability, sectarianism, sati, primacy of the priestly class**, etc. becoming commonplace.
- While his teachings were very much in tune with the prevailing social conditions of his day, his message was formulated in the language of revivalism rather than progressive reform.
- A major part of his mission was to address the fragmented nature of Hindu society.
- According to Dayanand Saraswati, the brahmins were primarily to blame for this – they had corrupted the Sanatan Dharma in order to maintain and grow their own status and influence in society.

- He **founded the Arya Samaj in 1875** which was a **monotheistic Hindu order** that **rejected the ritualistic excesses and social dogmas of orthodox Hinduism** and **promoted a united Hindu society on the basis of Vedic teachings**.
- Even before the establishment of the Arya Samaj, Dayanand Saraswati had founded multiple Vedic schools.
- Modelled on missionary schools that were increasingly popular among Indians, these **Gurukuls** provided an Indian alternative, based on principles of the Vedas.
- Dayanand Saraswati **died under suspicious circumstances in 1883, after his public criticism of the Maharaja of Jodhpur**.

Dayanand's philosophy & legacy-

- Dayanand Saraswati preached respect and reverence for other human beings, supported by the Vedic notion of the divine nature of the individual.
- Crucial among his “ten founding principles of Arya Samaj” is the idea that all activities must be done for the benefit of humankind as a whole, rather than individuals or even idols and religious symbols.
- This universalism was directly antithetical to the caste system.
- While Dayanand did not fully oppose the institution of caste itself, he advocated for significant reform within it.
- Furthermore, he was against the practice of untouchability, which he believed was an outcome of centuries of brahmanical domination.
- Crucially, he advocated Vedic education for all castes.
- He campaigned for the education of women as well as against ‘regressive practices’ such as child marriage.
- He is credited to have first used the term swaraj (self-rule) in 1875, which would later be picked up by the likes of Lokmanya Tilak and Mahatma Gandhi.
- He was among the first to advocate ‘conversion’ into the Hindu fold – he supported the idea of shuddhi, to bring back Islamic or Christian converts into Hinduism.
- This became a very popular movement by the early 20th century, especially aimed at lower caste converts who were given a higher social status and self-esteem under the more egalitarian Arya Samaji philosophy.
- Today, Dayanand Saraswati's legacy carries on through the Arya Samaj centres found across India as well as the Dayanand Anglo-Vedic schools and colleges.
- Sarvapalli Radhakrishnan, India's second President and an influential educationist, called him “a maker of modern India”.

8.6 Lavani folk art form

In news- A younger generation of women dancers are accused of vulgarising Lavani, the traditional folk art form.

What is the Lavani folk art form?

- The word Lavani comes from ‘lavanya’ or beauty.
- Lavani is a traditional folk art form in which women dancers wearing nine-yard-long sarees (a nauvari saree) in bright colours, make-up, and ghunghroos perform on dholak beats on a stage before a live audience.
- As an indigenous art form, Lavani has a history going back several centuries, and it attained particular popularity in the Peshwa era in the 18th century.
- Traditionally, performances were held in front of kings or lords, and for the entertainment of tired soldiers resting during breaks in fighting.
- Lavani dance was generally performed by Dhangars or Shepherd living in Solapur, Maharashtra.
- Lavani developed in two distinct performances, namely Phadachi Lavani and Baithakichi Lavani.
- The Phadachi Lavani is performed publically in front of a large audience while Baithakichi Lavani is performed in private in an enclosed chamber performed for a selective audience.
- Essentially, themes of Lavani are divided into two- The Nirguni Lavani (philosophical) and the Shringari Lavani (sensual).

- It is traditionally performed in different social settings: Dholki-phad Tamasha and Sangeet Bari.
- Tamashas are performed by travelling groups in jatras (village fair), weekly markets, etc. in front of large audiences.
- The Sangeet Bari on the other hand, is stationary and traditionally features only female artists.
- The audience has historically been all-male, but in recent years, some women too have begun to attend performances.

8.7 Mehrauli city

In news- Delhi Development Authority (DDA) is undertaking a drive to clear unauthorized encroachments on government land in the Mehrauli and Ladha Sarai villages.

History of Mehrauli city-

- Mehrauli is widely considered to be the oldest 'city' of Delhi and is the oldest area of the metropolis to be continuously inhabited.
- First founded as Lalkot in the 11th century by Anangpal II, a ruler of the Rajput Tomar dynasty, remains of the earliest version of the city can be found around Sanjay Van and the Qutab Golf Course.
- This was later christened 'Quila Rai Pithora' by Mughal court historian Abu'l Fazl in his epic hagiography, 'Ain-i-Akbari'.
- This city passed hands from the Tomars to the Chauhans, who are credited to have further fortified the complex.
- The city fell into the hands of the Mamluk dynasty (Slave dynasty) in 1192.
- Under ruler Qutubudin Aibak, the first ruler of the Slave dynasty, the next round of construction began in the area.
- Notably, he began the building of the Qutub Minar to commemorate his victory as well as the Quwwat-al-Islam (Might of Islam) mosque, the oldest known mosque in north India (India's oldest mosque, Cheraman Juma was built by Arab merchants in Kerala).
- In the next century, a slew of building activities took place in the region with tombs, baolis (step wells), palaces and other fortifications built in the reigns of Iltutmish, Razia Sultan and Alauddin Khilji.
- Due to its location on the lap of the Aravallis hills, the area was preferred as a summer retreat.
- Two Mughal summer palaces (Zafar Mahal and Jahaz Mahal) and a summer abode of Sir Thomas Metcalfe (Dilkhusha) are situated here.
- Mehrauli lay on a historic trade route, as the number of sarais (Ladho Sarai, Ber Sarai, Neb Sarai) around the area would suggest.
- A sarai was a resthouse for weary travellers.
- In 'Atlas of the Mughal Empire', historian Irfan Habib writes that the area would have been along the trading route connecting BaraPullah (a Mughal-era bridge in Delhi) to Pataudi, Rewari and Narnaul (in present-day Haryana).
- As per the historians, Jalaluddin Khilji's (1290-1296) built the bazaar (market) in Mehrauli.
- He settled the merchants within the walls — a grain market/mandi by Mandavi Darwaza of Mehrauli and a cloth market known as Sara-E-Adl near Badaun Gate. Both gates do not exist any longer.
- Today, Mehrauli is famous for a wholesale mandi (market) where one can find all kinds of products, from dehati hookahs to exotic dragon fruits.
- It also houses multiple designer boutiques and some new eateries, which heavily lean into "the heritage" of the original Old Delhi.

The cosmopolitanism of Mehrauli-

- Mehrauli is also a spiritual centre, home to both Hindu and Muslim shrines.
- Sufi saint Hazrat Qutubuddin Bakhtiar Kaki (1173 -1235 AD) was buried in the city and his dargah remains popular till date, across religious lines.
- Another spiritual centre for the community is the Yogmaya mandir, believed to be one of the oldest in the city.

- Yoginis (semi-divine deities) have been an integral part of Indian folklore and this temple dedicated to them is believed to have been constructed by the Pandavas.
- The cosmopolitan spirit and secular heritage of Mehrauli are perhaps best expressed in the annual community celebration of 'Phool Walon ki Sair' or Sair-e-Gulfaroshan (walk of the flowers).
- This 19th-century Mughal-era festival was revived in 1962 by India's first prime minister, Jawaharlal Nehru, and has become the symbol of the city's communal harmony since then.

The seven cities of Delhi-

- The **city's history far predates Shahjahanabad**, with the oldest evidence of habitation – painted grey ware fragments found in Purana Quila – dating back to the Iron Age (circa 1100-800 BC).
- **Historians identify seven cities of Delhi, dating from the 11th century onwards:** Lalkot/Quila Rai Pithora/Mehrauli, Siri, Tughlaqabad, Firozabad, Shergarh (present-day Old Fort), Shahjahanabad and New Delhi.
- Depending on how one counts and what one considers 'a city', this number can be as high as 11.

8.8 Khalistan movement

A brief history of Khalistan movement-

- The Khalistan movement is a fight for a separate, sovereign Sikh state in present day Punjab (both India and Pakistan).
- The movement was crushed in India following Operation Blue Star (1984) and Operation Black Thunder (1986 and 1988), but it continues to evoke sympathy and support among sections of the Sikh population, especially in the Sikh diaspora in countries such as Canada, the UK, and Australia.
- The origins of the movement have been traced back to India's independence and subsequent Partition along religious lines.
- The Punjab province, which was divided between India and Pakistan, saw some of the worst communal violence and generated millions of refugees: Sikhs and Hindus stranded on the west (in Pakistan) rushed to the east, whereas Muslims in the east fled westward.
- Lahore, the capital of Maharaja Ranjit Singh's great Sikh Empire, went to Pakistan, as did holy Sikh sites including Nankana Sahib, the birthplace of Guru Nanak, the founder of Sikhism.
- While most Sikhs found themselves in India, they were a small minority in the country, making up around 2 per cent of the population.
- The political struggle for greater autonomy began around the time of Independence, with the Punjabi Suba Movement for the creation of a Punjabi-speaking state.
- The States Reorganisation Commission, in its 1955 report, rejected this demand, but in 1966, after years of protest, the state of Punjab was reorganised to reflect the Punjabi Suba demand.
- The erstwhile Punjab state was trifurcated into the Hindi-speaking, Hindu-majority states of Himachal Pradesh and Haryana, and the Punjabi-speaking, Sikh-majority Punjab.

The Anandpur Sahib Resolution-

- The Punjabi Suba movement had galvanised the Akali Dal which became a major force in the new Sikh-majority Punjab, and gave the Congress hard fights in the Legislative Assembly elections of 1967 and 1969.
- But in 1972, in the aftermath of Indira Gandhi's resounding victory in the 1971 Lok Sabha elections, the Akali Dal's performance in the state was underwhelming.
- The party met at the sacred town of Anandpur Sahib, the birthplace of the Khalsa, in 1973, and released a list of demands that would guide the political path of the Akali Dal.
- Among other things, the Anandpur Sahib Resolution demanded autonomy for the state of Punjab, identified regions that would be part of a separate state, and sought the right to frame its own internal constitution.
- While the Akalis themselves repeatedly made it clear that they were not demanding secession from India, for the Indian state, the Anandpur Sahib Resolution was of grave concern.

What was Operation Blue Star?

- Operation Blue Star was the codename of a military operation which was carried out by Indian security forces between 1 and 10 June 1984 in order to remove Damdami Taksal leader Jarnail Singh Bhindranwale and his followers from the buildings of the Golden Temple, the holiest site for Sikhs located in Amritsar, Punjab, India.
- **Indira Gandhi took the fateful decision to order the Indian Army to flush out militants from the Golden Temple and neutralise Bhindranwale.**
- **Operation Blue Star began on June 1, 1984**, but due to fierce resistance from Bhindranwale and his heavily armed supporters, the Army's operation became larger and more violent than had been originally intended, with the use of tanks and air support.
- Though **Bhindranwale was killed and the Golden Temple was freed of militants**, it **gravely wounded the Sikh community** around the world and also galvanised the demand for Khalistan.
- **On October 31, 1984, Prime Minister Indira Gandhi was assassinated by two Sikh bodyguards.**
- This triggered the worst communal violence since Partition — even according to conservative estimates, over 8,000 Sikhs were massacred in massive anti-Sikh street violence.
- **A year later, Sikh nationalists based in Canada blew up an Air India flight killing 329 people.** They claimed that the attack was to “avenge Bhindranwale's killing”.
- Punjab saw the worst violence, becoming the hub of a long drawn out insurgency that lasted till 1995.

8.9 Sursingar, Mandolin & Karakattam

In news- In his Mann ki Baat address recently, Prime Minister Narendra Modi spoke of several musical instruments and folk artists including Sursingar, Karakattam, and Mandolin.

Sursingar-

- It is a stringed musical instrument that is similar to the sarod, but which is older and produces deeper notes.
- The instrument is made of wood and has a gourd attached to a hollow wooden handle with a metal fingerboard.
- The strings of the instrument, usually four in number and made of brass or bronze, are plucked with a metal pick.
- The Sursingar can be played either holding it vertically in front of the musician and supported by his left shoulder like the Veena, or holding it parallel to the ground like the Sarod, or like the Sitar, which is held at an angle of 50-60 degrees to the ground.
- The Sursingar (along with the Rudra Veena and the Surbahar) usually accompanies Dhrupad, the genre of Hindustani vocal music which has a low, deep, and thoughtful pitch.
- With very few artisans now making the Sursingar, the instrument is rarely used in performances.
- Kolkata-based multi-instrumentalist Joydeep Mukherjee is credited with reviving the Sursingar, along with another “lost” stringed instrument, the Radhika Mohanaveena, named after its creator, Radhika Mohana Maitra.
- Joydeep is among the youth honoured with the Ustad Bismillah Khan Award.

Mandolin-

- It is also a stringed instrument, usually with eight strings that are plucked with a pick, similar to a lute.
- The Mandolin is a moderately sized instrument, smaller than the Veena, Sitar, or guitar, and was developed in Europe in the 18th century as an evolution of the older Mandora (Mandola).
- The instrument's modern form and proportions were strongly influenced by its maker Pasquale Vinaccia of Naples (1806-82), and in the 20th century, it was built in a family of sizes from soprano to contrabass.
- The Mandolin has long been part of the Indian film music tradition, having been used by several great composers including Shankar Jaikishan, Ilaiyaraaja and A R Rahman.

- The greatest exponent of the Mandolin in Indian classical music was the late Uppalapu Srinivas (Ustad Bismillah Khan Yuva Puraskar 2021 for Carnatic Instrumental), often known as 'Mandolin' Srinivas who, however, used the electric instrument rather than the acoustic one.
- India's best known Mandolinists today are Snehashish Mozumder, Pradipto Sengupta, and N S Prasad.

Karakattam-

- Karakattam is an ancient folk dance of Tamil Nadu in which performers in colourful saris dance with a pot (karakam) on their head to invoke Mariamman, the goddess of rain.
- The dance form became well known with the success of the Tamil film Karakattakaran (1989), but has been criticised by purists for becoming allegedly low-brow and vulgar of late.
- V Durga Devi of Salem is a well known Karakattam dancer.

8.10 150th anniversary of Calcutta trams

In news- On February 24, Kolkata's iconic tram service celebrated 150 years since the first tram was flagged off.

History of Calcutta trams-

- The first trams, drawn by horses, took to Calcutta streets on February 24, 1873.
- Today, Kolkata remains the only city where trams are still plying.
- While a licence for horse drawn trams was granted in Bombay in 1865, due to multiple reasons, the project fell through.
- Instead, the first trams entered service in the then British capital of Calcutta in 1873.
- The horse-drawn trams plied on a 3.8 km route between Sealdah and Armenian Ghat Street. However, by the end of the year, the service was discontinued as the venture was not economically viable.
- In 1874, the first horse-drawn trams emerged in Mumbai, plying on two routes – Colaba to Pydhonie via Crawford Market, and Bori Bunder to Pydhonie.
- Nasik would be the third city in India which saw trams and Horse-drawn trams also debuted in Patna in 1886.
- These initial tram systems were little more than horse taxis being driven on fixed lines. They were slow and required an immense number of horses to be viable, making them difficult to succeed economically.

Arrival of the locomotive-

- In 1880, trams re-emerged in Calcutta, when Lord Ripon inaugurated a new, longer, metre-gauge route.
- Two years later, the Calcutta Tramway Company would experiment with steam locomotives (instead of horses) to pull trams.
- However, locomotives were never universally adopted for tram systems.
- Mumbai, Nasik or Patna would never switch to steam locomotives.
- The Cochin State Forest Tramway began operations in 1907, transporting teak and rosewood from the forests of Palakkad to the town of Chalakudy in Thrissur District.
- At the time, this was the longest tram route in India, stretching nearly 80 km and the only one not geared towards urban transport.
- In 1926, under the reign of Colonel Maharaja Raol Sir Shri Krishna Kumarsinhji Bhavsinhji, locomotive-driven tramways were introduced in the Princely State of Bhavnagar.

Electric trams-

- In 1895, Madras (present-day Chennai) saw India's first electric tramways enter service with seven cars.
- Unlike steam locomotives, these were far cleaner and less noisy, and thus immediately became a preferred option.
- By 1902, Calcutta saw its first electric tramcars, plying between Esplanade and Kidderpore, and Esplanade and Kalighat.

- Bombay would see electrification too, in 1907 and Cawnpore (present-day Kanpur) saw a 6.4-km track that became operational in 1907.
- Delhi saw its first trams a year later, in the area now called Old Delhi.

The demise of India's tram systems-

- **By the 1960s**, tramways, which were once seen as a revolutionary development in urban transport, had all but **vanished in India**.
- **Today, Kolkata remains the last city which still operates trams**, though these old colonial relics are perpetually at risk of being discontinued.
- Trams saw their demise due to a variety of reasons, from the emergence of better alternatives to issues with economic viability.
- **Patna was the first city to discontinue tram service in 1903, on account of low ridership.**

The future of trams-

- Melbourne operates the largest tram network in the world and plans to continue upgrading its system.
- In 2020, a proposal to introduce a tram system in Mahabalipuram was floated, geared towards helping tourists explore the historical town near Chennai.

8.11 Sant Sevalal Maharaj

In news- The Central government has recently kick-started the year-long commemoration of the 284th birth anniversary of Sant Sevalal Maharaj, a spiritual and religious leader of the Banjara community.

About Sant Sevalal Maharaj-

- Sant Sevalal Maharaj was born on February 15, 1739, at Surgondankoppa in Karnataka's Shivamogga district.
- It's believed that while he was young, he miraculously prepared sheera (a sweet) out of the mud and wheat puri to offer to Goddess Jagadamba — making him a divine personality in the eyes of his followers.
- He worked tirelessly to dispel and eradicate myths and superstitions prevalent in the tribal communities, including the Banjaras, and brought about reforms in their way of life.
- Sant Sevalal Maharaj is believed to have mastery in Ayurveda and Naturopathy.
- Many also believe that once he moved to Hyderabad, he cured cholera in the city and was allowed to graze his cattle in the present-day Banjara Hills area.
- Sant Sevalal died at the age of 33 in Maharashtra.
- His shrine is situated in Manora Taluka of Washim District of Maharashtra at Pohradevi, also known as Banjara Kashi.
- Today, he is revered as a spiritual guru and social reformer by the Banjara community, which has mainly settled in parts of Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Maharashtra and Madhya Pradesh.

Banjara community-

- The Banjara (also known as Lambadi, Gour Rajput, Labana) are a historically nomadic trading caste who may have origins in the Mewar region of what is now known as Rajasthan.
- The Banjaras usually refer to themselves as Gor and outsiders as Kor but this usage does not extend outside their own community.
- Together with the Bhopa, Domba and Kalbelia, they are sometimes called the "Gypsies of India"
- The name Banjara /Banjari probably came from two different sources: 'Baniyya' - trade or 'Banachara', the forest dwellers.
- Their principal group's name Laban/Labana is derived from the Sanskrit word lavanah, meaning salt as they were salt traders.

- The Banjaras were among many tribes that resisted the British attempt to seize their lands for plantations and enrol them as labour.
- Their constant revolt frustrated the British, and in 1871, the Banjaras and several other tribes were brought under the Criminal Tribes Act, and put to hard labour in order to cure their “criminal” tendencies.
- After Independence, the community was denotified in the 1950s, but were listed under the Habitual Offenders Act, 1952.
- Now, the Banjara community have been declared as ST in five States (Andhra Pradesh, Telangana, Bihar, Odisha, Jharkhand), Scheduled Caste in Himachal Pradesh and Karnataka, and OBCs in Chhattisgarh, Daman and Diu, Haryana, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh, Uttarakhand.

9. LAW AND POLICY

9.1 Mission Antyodaya Survey 2022-23

In news- Ministry Rural Development has launched Mission Antyodaya Survey to shed light on India's rural economy.

About the Survey-

- The survey will be conducted among 2,69,253 gram panchayats across the country, all of which have their **profiles on E-Gram Swaraj portal**.
- This survey will help us find the last mile gap and fill it to make a robust and flourishing rural economy in all the states.
- **First mentioned in the 2018 budget**, three such surveys have been done in the past.
- The last survey was conducted in October 2020, with Kerala topping the charts.
- As per the 2020 survey, only 10 out of 31 states and Union Territories improved their score while there was no change in scores of 16 states. There were five states which witnessed a decline in their scores.
- The survey questions have been categorized into **five stratum**s: (i) Panchayat Infrastructure; (ii) Panchayat Services; (iii) Village Infrastructure; (iv) Village Services; and (v) Village Practices.
- The 21 sectors being covered in the M A Survey are: (i) good governance; (ii) agriculture and land development, fuel and fodder; (iii) animal husbandry; (iv) fisheries; (v) rural housing; (vi) water and environmental sanitation; (vii) roads and communications; (viii) conventional and non-conventional energy; (ix) financial and communication infrastructure; (x) markets and fairs; (xi) the Public Distribution System; (xii) library; (xiii) recreation and sports; (xiv) education/vocational education; (xv) health, nutrition, maternal and child development and family welfare; (xvi) welfare of weaker sections; (xvii) poverty alleviation programme; (xviii) Khadi, village and cottage industries; (xix) social forestry; and (xx) Small scale industries.

Mission Antyodaya-

- Mission Antyodaya is a convergence and accountability framework aiming to bring optimum use and management of resources allocated by 27 Ministries/ Department of the Government of India under various programmes for the development of rural areas.
- It seeks to converge government interventions with Gram Panchayats as the basic unit for planning by following a saturation approach by pooling resources - human and financial - to ensure sustainable livelihoods.
- It is a State - led initiative for rural transformation to make a real difference based on measurable outcomes to the lives of households.

9.2 Uttarakhand's new anti-cheating law

In news- Recently, the Uttarakhand Governor gave his assent to the **Uttarakhand Competitive Examination (Measures For Control and Prevention of Unfair Means in Recruitment) Ordinance, 2023**, brought by the state government to prevent the use of unfair means in exams.

Key features of the law-

- The ordinance said that the **main aim behind the law was to prevent offences related to obstructing the sanctity of examinations**, use of unfair means, leakage of question papers, and other irregularities.
- It **covers public examinations for recruitment to posts under the state government, autonomous bodies** run by the government, and authorities, corporations, and institutions operated with grants of the state government.
- According to the ordinance, **if any examinee is caught cheating or causing another examinee** to cheat in a competitive examination (online and offline) or to have indulged in unfair means, he shall be **punishable with imprisonment for three years and with a minimum fine of Rs 5 lakh**.
- If the fine is not paid, the examinee shall be jailed for another nine months.
- **A second-time offender will be punishable with a minimum jail term of 10 years and fine of Rs 10 lakh**. In default of payment of fine, he will be jailed for another 30 months.
- **If any person, printing press, service provider contracted or ordered for examination, management for conducting an examination**, or any person and organization authorized to keep and transport the examination material, has indulged in conspiracy or other unfair means, they shall be punished with a jail term of not less than 10 years, which may extend to life imprisonment.
- They will also be **punished with a minimum fine of Rs 1 crore, which can go up to Rs 10 crore**.
- Also, **an applicant found cheating will be debarred for two to five years** from the date of the chargesheet, and in case of conviction, from all competitive exams for 10 years.
- All the properties earned using unfair means will be seized.
- **The offences are cognizable, non-bailable and non-compoundable**.

9.3 Draft Geo-heritage Sites and Geo-relics (Preservation and Maintenance) Bill

In news- Ministry of Mines has recently notified the draft Geo-heritage Sites and Geo-relics (Preservation and Maintenance) Bill.

Key features of the bill-

- The Bill is aimed at providing for the declaration, preservation, protection and maintenance of geo-heritage sites and geo-relics of national importance, for geological studies, education, research and awareness purposes.
- The Bill states that despite identifying these sites, there are concerns over their preservation.
- Due to the absence of any legislation in the country for the protection, preservation and maintenance of the geoheritage sites, these are increasingly threatened with destruction not only by the natural causes of decay but also by population pressure and changing social and economic conditions which is aggravating the situation.
- It states that the fossil wealth of dinosaur remains of Madhya Pradesh and Gujarat, marine fossils of Kutch and Spiti...oldest life forms viz. stromatolites of Rajasthan and Madhya Pradesh are of great geoheritage and geotourism value.
- The world's oldest metallurgical records of gold, lead and zinc in Rajasthan and Andhra Pradesh are still preserved but are under great threat.
- It points to how the GSI has the authority to acquire any material of geological significance, including sediments, rocks, minerals, meteorites, and fossils, as well as sites of geological importance.

The key proposals say:

- It would authorise the Central Government to declare a geoheritage site to be of national importance.
- This would be under the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCTLARR Act).
- Through a public notification in the Official Gazette, the government would spell out what areas were to be acquired by it, and objections to this can be raised within two months.
- Provision is made for compensation to the owner or occupier of land who incurs loss or damage from the land due to the exercise of any power under this Act.
- The market value of any property will be ascertained in accordance with the principles set out in the RFCTLARR Act.
- The Bill imposes a prohibition on construction, reconstruction, repair or renovation of any building within the geoheritage site area or utilisation of such area in any other manner, except for construction for preservation and maintenance of geoheritage site or any public work essential to the public.
- Penalties for destruction, removal, defacement or contravention of any direction issued by the Director General, GSI in the geo-heritage site are mentioned.
- There is a penalty of imprisonment which may extend to six months or fine which may extend to Rs.5 lakh, or both.

What are the Geo-heritage Sites and Geo-relics?

- The draft bill defines Geoheritage sites as “sites containing geo-relics and phenomena, stratigraphic type sections, geological structures and geomorphic landforms including caves, natural rock-sculptures of national and international interest; and includes such portion of land adjoining the site,” that may be required for their conservation or to access to such sites.
- A Geo-relic is defined as “any relic or material of a geological significance or interest like sediments, rocks, minerals, meteorite or fossils”. The Geological Survey of India (GSI) will have the power to acquire geo-relics “for its preservation and maintenance”.
- According to a 2016 press release by the Ministry of Mines, the GSI declares geo-heritage sites/ national geological monuments for protection and maintenance. The GSI or the respective state governments take necessary measures to protect these sites.
- Coming under the Ministry of Mines, the GSI was established in 1851 to investigate and assess coal and other mineral resources of the country through regional-level exploration.
- The 32 geo-heritage sites spread across 13 states include the Volcanogenic bedded Barytes of Mangampeta in Cuddapah district of Andhra Pradesh, the Akal Fossil Wood Park in Jaisalmer, Rajasthan and others.

State-wise details of the geological heritage sites/ national geological monuments

S. No	Geological heritage site / National geological monument	S. No	Geological heritage site / National geological monument
	ANDHRA PRADESH	18	Kishangarh Nepheline Syenite, Ajmer Dist.
1	Volcanogenic bedded Barytes, Mangampeta, Cuddapah Dist.	19	Welded Tuff, Jodhpur Dist.
2	Eparchaeon Unconformity, Chittor Dist.	20	Jodhpur Group – Malani Igneous Suite Contact, Jodhpur Dist.
3	Natural Geological Arch, Tirumala Hills, Chittor Dist.	21	Great Boundary Fault at Satur, Bundi Dist.

4	Erra Matti Dibbalu- the dissected and stabilized coastal red sediment mounds located between Vishakhapatnam and Bhimunipatnam.		MAHARASHTRA
	KERALA	22	Lonar Lake, Buldana Dist.
5	Laterite near Angadipuram PWD rest house premises, Malapuram Dist.		CHATTISGARH
6	Varkala Cliff Section, Thiruvananthapuram Dist.	22	Lower Permian Marine bed at Manendragarh, Surguja Dist.
	TAMILNADU		KARNATAKA
7	Fossil wood near Tiruvakkarai, South Arcot Dist.	24	Columnar Lava, St Mary Island Udupi Dist.
8	National fossil wood park, Sattanur, Tiruchirapalli Dist.	25	Pillow lavas near Mardihalli, Chitradurga Dist.
9	Charnockite, St. Thomas Mount, Madras.	26	Peninsular Gneiss, Lalbagh, Bangalore
10	Badlands of Karai Formation with Cretaceous fossils along Karai – Kulakkalnattam Section, Perambalur District.	27	Pyroclastics & Pillow lavas, Kolar Gold fields, Kolar Dist.
	GUJARAT		HIMACHAL PRADESH
11	Sedimentary Structures – Eddy Markings, Kadan Dam, Panch Mahals Dist.	28	Siwalik Fossil Park, Saketi, Sirmur dt.,
	RAJASTHAN		ODISHA
12	Sendra Granite, Pali Dist.	29	Pillow Lava in Iron ore belt at Nomira, Keonjhar dist.
13	Barr Conglomerate, Pali Dist.		JHARKHAND
14	Stromatolite Fossil Park, Jharmarkotra Rock Phosphate deposit, Udaipur Dist.	30	Plant Fossil bearing Inter-trappean beds of Rajmahal Formation, upper Gondwana sequence around Mandro, Sahibganj dist.
15	Gossan in Rajpura-Dariba Mineralised belt, Udaipur Dist.		NAGALAND
16	Stromatolite Park near Bhojunda, Chittaurgarh Dist.	31	Nagahill Ophiolite Site near Pungro,
17	Akal Fossil Wood Park, Jaisalmer Dist.		SIKKIM
		32	Stromatolite bearing Dolomite / Limestone of Buxa Formation at Mamley, near Namchi, South district.

9.4 Norms of organ donation eased

In news- Recently, the Union Ministry of Health and Family Welfare has eased the norms related to organ transplants/donation.

Which norms have been relaxed?

- The clause that people beyond 65 years could not receive cadaver organ transplants had been removed.
- The government has decided to do away with a clause in the National Organ and Tissue Transplant Organisation (NOTTO) guidelines as the clause violates the Right to Life.
- Now an individual of any age can register for organ transplant.
- Also, earlier an organ recipient could register for a prospective transplant in domicile State.
- States like Gujarat had made it mandatory for registered patients to furnish a domicile certificate to be eligible for a transplant. In November 2022, the Gujarat High Court quashed the discriminatory policy of the State government.
- In line with the judgment, the Indian government has decided to do away with the domicile policy and all States have been intimated about this decision.
- A patient irrespective of domicile State can register in any other State for a transplant.
- The patient will be allotted a unique ID by NOTTO on registering which will get carried forward even if the patient changes multiple hospitals in different States.
- Apart from this, certain States like Kerala and Maharashtra have been charging fees ranging from ₹5,000 to ₹10,000 for registering organ transplant patients. The Health Ministry has intimated States to stop charging registration fees from patients.
- The Health Ministry is charting a 'One Nation One Policy,' for organ donation and transplantation.
- Cadaveric donation comprises organ donation—that is, taking organs (heart, lungs, kidneys, liver, pancreas) from brain dead people, as well as tissue donation, meaning taking tissues (skin, corneas, tendons, bone) from brain dead as well as heart dead people.

Organ donation in India-

- Organ donation in India is regulated by the Transplantation of Human Organs and Tissues Act, 1994.
- The law allows both deceased and living donors to donate their organs.
- It also identifies brain death as a form of death.
- According to data accessed from the Health Ministry, the number of organ transplants have increased by over three times from 4,990 in 2013 to 15,561 in 2022.
- Of the 15,561 transplants, a majority (82%) are from live donors and (18%) are from cadavers.
- Up to 11,423 of the 15,561 organ transplants are for the kidney, followed by liver, heart, lung, pancreas (24) and small bowel transplants.
- Most of these transplants occur in private hospitals, the numbers in government hospitals are relatively lower.

About NOTTO-

- The NOTTO is a National level organization set up under the Directorate General of Health Services, Ministry of Health and Family Welfare.
- It has the following two divisions: i. National Human Organ and Tissue Removal and Storage Network and ii. National Biomaterial Centre.
- National Human Organ and Tissue Removal and Storage Network has been mandated as per the Transplantation of Human Organs (Amendment) Act 2011.
- The network will be established initially for Delhi and gradually expanded to include other States and Regions of the country.
- National Network division of NOTTO would function as apex centre for All India activities of coordination and networking for procurement and distribution of Organs and Tissues and registry of Organs and Tissues Donation and Transplantation in the country.

9.5 The Supreme Court of India transcribes its proceedings live using AI

In news- The Supreme Court of India recently started a first-of-its-kind project to transcribe its proceedings live using Artificial Intelligence (AI).

How does the AI powered transcription work?

- The SC transcription is using Teres, which is a platform used often for transcribing arbitration proceedings.
- The platform is run by Nomology Technology Private Limited, a Bengaluru based company.
- The transcript will also be shared with lawyers who argued cases for verification, and is likely to be uploaded on the SC website every evening.
- The transcribing is the second major decision towards making the court more transparent after the SC's decision to livestream its proceedings before Constitution Benches.
- The suggestion to transcribe hearings was made by senior advocate Indira Jaising in the plea she had filed seeking live telecast of court proceedings.
- Jaising, who was one of the petitioners in the matter that led to the 2018 Supreme Court verdict that declared the live telecast of court proceedings part of the right to access justice under Article 21 of the Constitution.

Availability of transcripts for courts in other countries-

- In the US, court transcripts are available to litigants and the public.
- The US Supreme Court provides audio and text transcripts of the proceedings.
- In the UK, a litigant can ask for a transcript of the court proceedings for a fee if the hearing is recorded.

What is the transcript in court?

- A transcript is a written record of spoken language.
- In court proceedings, a transcript is usually a record of all decisions of the judge, and the spoken arguments by the litigants' lawyers.
- Audio files, such as recordings and podcasts, are commonly transcribed into readable, written text.

9.6 World's largest and unique Divyang Park -Anubhuti Inclusive Park

In news- The Union Minister for Road Transport and Highways has recently laid the Foundation Stone of the **world's largest and unique Divyang Park** - Anubhuti Inclusive Park in Nagpur, Maharashtra.

About the park-

- The park will have adapted facilities for all 21 types of disabilities.
- It will have facilities like a touch and smell garden, hydrotherapy unit, water therapy, and an independent room for mentally challenged children, mother.
- A provision of about Rs 12 crore has been made by the Ministry of Social Justice and Empowerment, Government of India, for this park being built in an area of 90 thousand square feet.
- In 2016, the central government passed the Rights of Persons with Disabilities Act for the rights of persons with disabilities.
- Taking initiative under this, the Central Government has already created some Divyang Parks in South India and Madhya Pradesh.

9.7 Jadui Pitara

In news- As envisaged under National Education Policy 2020, the Union Education Minister has recently launched Jadui Pitara- a **play-based learning-teaching material for Foundational Stage**.

What is Jadui Pitara?

- It is a play-based learning-teaching material tailored for **children between the age group of 3-8 years**.
- It comprises playbooks, toys, puzzles, posters, flash cards, story books, worksheets as well as reflecting the local culture, social context and languages is designed to pique curiosity and accommodate the diverse needs of learners in the foundational stage.
- It was developed under the National Curriculum Framework(NCF) and is **available in 13 Indian languages**.
- The National Education Policy 2020 envisages 5+3+3+4 curriculum pedagogical structure.
- The Department of School Education & Literacy under the Ministry of Education has constituted a National Steering Committee headed by Prof. K. Kasturirangan to develop the National Curriculum Framework for each of the stages.
- The NCF for foundational stage (FS) was launched by Ministry of Education on 20th October, 2022 and as per the curriculum framework, NCERT has developed and collected Learning Teaching Material (LTM). Accordingly, "Learning Teaching Material" for foundational stage was launched today using the concept of "Jaadui Pitara".
- It is expected to bring NEP and NCF-FS to practice, in the hands of teachers and students.

The salient points of "Jaadui Pitara" are as follows:-

- CORE transformative aspect of NCF-FS - 'learn through Play':
- Foundational Stage - ages 3-8- learn best and effectively through Play
- Research from fields as diverse as Neurosciences to Education
- Applies to Class 1 & 2 also (age 6-8) - huge shift - children will learn through play, have fun, and FLN will be addressed.
- Learning and Development in 5 domains: Physical Development, Socio-emotional and Ethical Development, Cognitive Development, Language and Literacy Development, Aesthetic and Cultural Development, Positive Learning Habits has been included as another domain of development at this stage.
- Jaadui Pitara brings all this to life:
- Range of resources.
- Flexibility to accommodate variety and local resources.
- Fun.

9.8 'Corrupt practices' under the RPA, 1951

In news- Recently, the Supreme Court observed that no one in India votes for a candidate based on their educational qualifications and, thus providing false information about an electoral candidate's qualifications cannot be considered a "corrupt practice" under Sections 123 (2) and Section 123 (4) of the Representation of People's Act, 1951.

What are 'corrupt practices' under the RPA, 1951?

- Section 123 of the Act defines 'corrupt practices' to include bribery, undue influence, false information, and promotion or attempted promotion of "feelings of enmity or hatred between different classes of the citizens of India on grounds of religion, race, caste, community, or language" by a candidate for the furtherance of his prospects in the election.
- Section 123 (2) deals with 'undue influence' which it defines as "any direct or indirect interference or attempt to interfere on the part of the candidate or his agent, or of any other person, with the consent of the candidate or his election agent, with the free exercise of any electoral right."

- This could also include threats of injury, social ostracism and expulsion from any caste or community.
- Moreover, convincing a candidate or an elector that they will become “an object of divine displeasure or spiritual censure” will also be considered an interference “with the free exercise of the electoral right of such candidate or elector.”
- Section 123 (4) extends the ambit of “corrupt practices” to the intentional publication of false statements which can prejudice the outcome of the candidate’s election.
- Under the provisions of the Act, an elected representative can be disqualified if convicted of certain offences; on grounds of corrupt practices; for failing to declare election expenses; and for interests in government contracts or works.

What practices has the court held as corrupt practices in the past?

- In 2017, a seven-judge constitution bench of the apex court headed by former Chief Justice TS Thakur in ‘Abhiram Singh v C.D. Commachen held that **an election will be annulled if votes are sought in the name of a candidate’s religion, race, caste, community, or language, as per Section 123 (3) which prohibits the same.**
- However, in the dissenting opinion, CJI DY Chandrachud along with Justices UU Lalit and AK Goel said, “To hold that a person who seeks to contest an election is prohibited from speaking of the legitimate concerns of citizens that the injustices faced by them on the basis of traits having an origin in religion, race, caste, community or language would be remedied is to reduce democracy to an abstraction.”
- **In 1994, the Supreme Court’s ruling in ‘SR Bommai v. Union of India’,** which otherwise held **secularism to be a part of the ‘basic structure’,** the court said, “whatever the attitude of the State towards the religions, religious sects, and denominations, **religion cannot be mixed with any secular activity of the State.**”
- The encroachment of religion into secular activities is strictly prohibited, the court stated while adding that the same is clear from sub-section (3) of Section 123 of the Representation of the People Act, 1951.
- **However, even as far back as 1955, the Apex Court in ‘Jamuna Prasad Mukhariya v. Lacchi Ram’ upheld the constitutional validity of Section 123 (3).**
- More recently in 2022, the top court directed a three-judge bench to look into prayers for reconsidering its 2013 judgement in ‘S. Subramaniam Balaji vs State of Tamil Nadu’, **where the court held that promises of freebies cannot be termed a corrupt practice. However, the matter is still yet to be decided.**

9.9 Sansad Awards

In news- The Prime Minister Narendra Modi congratulated fellow Members of Parliament who will be conferred the Sansad Ratna Awards 2023.

About Sansad Ratna Awards-

- The Sansad Ratna Awards were instituted in 2010, inspired by the teachings of former President APJ Abdul Kalam, who launched the first edition of the Award function in Chennai.
- They seek to recognise and felicitate the top-performing MPs on the basis of their work in the apex legislative body.
- So far, 90 Parliamentarians have been given this award. The 13th edition of the award ceremony is set to be held March 25 2023 in New Delhi.

Who chooses the winners and how?

- Its jury committee comprises “eminent Parliamentarians and (members of) civil society”.
- It was chaired by Arjun Ram Meghwal (MoS, Parliamentary Affairs) and co-chaired by T S Krishnamurthy (Former Chief Election Commissioner of India).
- These nominations were based on an MP’s cumulative performance in Parliament, from the beginning of the 17th Lok Sabha until the end of Winter Session 2022.
- **Factors that the decision is based on include questions asked, private members’ Bills introduced, debates initiated, attendance, funds utilised, etc.**

- The performance data of the members have been sourced from information provided by PRS Legislative Research.

Which is the organisation that instituted the Sansad Ratna Awards and runs the award function?

- **The Sansad Ratna Awards are not given by the Government of India**, though over the years, its jury members have included individuals in the government.
- **The awards were instead the brainchild of K Srinivasan, a communication strategist who founded the Prime Point Foundation in 1999.**
- Started to “promote communication awareness”, it is this foundation which runs the awards show, alongside the foundation’s monthly eMagazine PreSence.
- **The awards were started with support from IIT Madras.**

9.10 Supreme court of India to adopt a “neutral citation system”

In news- Chief Justice of India (CJI) D Y Chandrachud has recently announced that the Supreme Court will adopt a “neutral citation system” for its judgments.

What is a “citation” and a neutral citation?

- A case citation is essentially an identification tag for a judgement.
- Typically, it would contain a reference number, the year of the judgement, the name of the court that delivered that judgement, and a shorthand for the journal publishing the judgement.
- A neutral citation would mean that the court would assign its own citation — distinct from those given by traditional Law Reporters.
- Law Reporters are periodicals or annual digests that publish judgments, often with an editorial note to make it accessible for lawyers to refer to precedents.
- For example, for the landmark Kesavananda Bharati case, the citation in ‘Supreme Court Cases’, a journal published by the Eastern Book Company, is (1973) 4 SCC 225. In the All India Reporter (AIR), the citation is AIR 1973 SC 1461.
- Judgments mention citations while referring to precedents and often use citations from different Law Reporters. With artificial intelligence (AI) enabled translation of judgments and transcribing of court proceedings, a uniform citation is necessary.
- Several High Courts including Delhi High Court have started a neutral citation format.

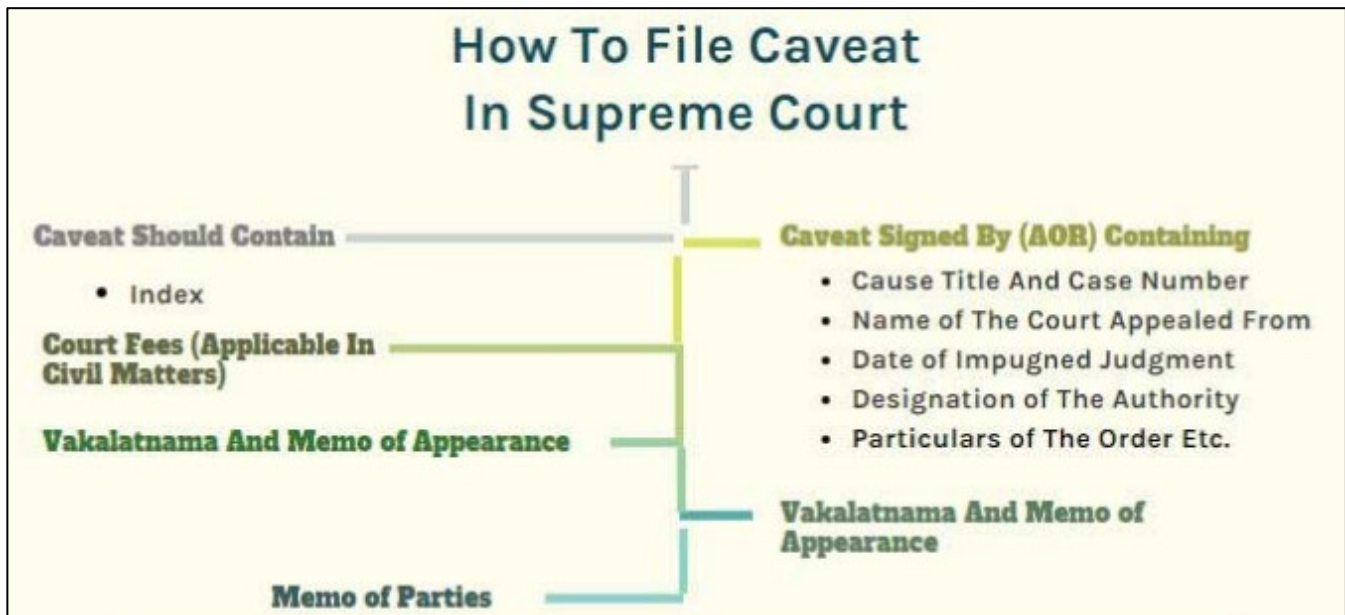
9.11 What is a caveat?

In news- Recently, Apex Court bench headed by CJI D Y Chandrachud reprimanded a law student for filing a caveat in “Shailendra Mani Tripathi v. Union of India & Others”.

What is a caveat?

- In common parlance, a caveat refers to “warning” or “caution”.
- However, legally it connotes a “formal notice requesting the court to refrain from taking some specified action without giving prior notice to the person lodging the caveat.”
- The person lodging the caveat is called a “caveator”.
- Inserted by the Amendment Act of 1976, added after the Law Commission’s recommendation, Section 148A of the Civil Procedure Code (CPC) explains when a person has a right to lodge a caveat as “where an application is expected to be made, or has been made, in a suit or proceeding instituted, or about to be instituted, in a Court, any person claiming a right to appear before the Court on the hearing of such application may lodge a caveat in respect thereof.”
- The caveator or the person lodging is also required to serve a notice of the caveat by “registered post” to the person on whose plea they are lodging the application

- However, the term “caveat” is not expressly defined anywhere except in the Calcutta High Court’s 1978 ruling in “Nirmal Chandra Dutta vs Girindra Narayan Roy” where the court defined the term as a caution or warning giving notice to the Court not to issue any grant or take any step without notice being given to the party lodging the caveat.
- It is a precautionary measure taken against the grant of probate or letters of administration, as the case may be, by the person lodging the caveat.



9.12 What is Section 153A of Indian Penal Code (IPC)?

In news- Pawan Khera, chairman of the media and publicity department of the All India Congress Committee was arrested for alleged hate speech Section 153A of IPC by Assam Police recently.

About Section 153A of IPC-

- It penalises “promoting enmity between different groups on grounds of religion, race, place of birth, residence, language, etc., and doing acts prejudicial to maintenance of harmony”.
- This is punishable with imprisonment up to three years, or with fine, or with both.
- The provision was enacted in 1898 and was not in the original penal code.
- In the pre-Independence Rangila Rasool case, the Punjab High Court had acquitted the Hindu publisher of a tract that had made disparaging remarks about the private life of the Prophet, and had been charged under Section 153A.
- Along with Section 153A, Section 505, which penalises “statements conducing to public mischief” was also introduced.
- In 1969, the offence was widely amended to enlarge its scope to prevent communal tensions.
- In the same amendment, the offence was also made cognisable, which means a police officer can make an arrest without a warrant.
- The FIR against Khera also mentioned Section 153B(1) (Making imputations, assertions prejudicial to national integration); 295A (Deliberate and malicious acts, intended to outrage religious feelings of any class by insulting its religion or religious beliefs); 500 (Defamation); and 504 (Intentional insult with intent to provoke breach of the peace).

Safeguards against misuse-

- **Sections 153A and 153B require prior sanction from the government for initiating prosecution.** But this is required before the trial begins, and not at the stage of preliminary investigation.

- To curb indiscriminate arrests, the **Supreme Court laid down a set of guidelines in its 2014 ruling in Arnesh Kumar v State of Bihar.**
- As per the guidelines, **for offences that carry a sentence of less than seven years, the police cannot automatically arrest an accused before investigation.**
- **In a 2021 ruling, the SC said that the state will have to prove intent for securing a conviction under Section 153A.**
- The court said that **words used in the alleged criminal speech should be judged from the standards of reasonable, strong-minded, firm and courageous men, and not those of weak and vacillating minds, nor of those who scent danger in every hostile point of view.**

9.13 Second edition of the Foundational Literacy and Numeracy (FLN) report

In news- The second edition of the FLN report was released by Dr Bibek Debroy, Chairman, Economic Advisory Council to the Prime Minister (EAC-PM).

Key highlights of the report-

- The report was released at #TheIndiaDialog organised by Institute for Competitiveness and US-Asia Technology Management Center, Stanford University, on February 23 & 24, 2023.
- It highlights the **focus on language as a critical foundational skill** and its importance in acquiring early literacy.
- **A special section in the report covers insights into states/UTs to assess children's learning outcomes** on the National Achievement Survey (NAS) and Foundational Learning Study (FLS) 2022.
- **State profiles and their performance on Distance from the Frontier are covered**, enabling states/Union Territories to track progress on foundational learning.
- **It captures the role of language in education and focuses on improving the learning outcomes** using appropriate assessments and medium of instruction.
- **A section of the report explicitly focuses on the numerous initiatives currently implemented** at the national and state level in collaboration with public-private organizations, demonstrating their efforts in achieving foundational learning goals as outlined in NIPUN.
- **The report continues to be a benchmark for states and union territories** to track their performance relative to their peers in achieving universal foundational learning by 2026-27.
- There are four categories in which regions have been divided, large states, small states union territories and north-east, for indexation.
- **West Bengal maintained its lead while Uttar Pradesh stood at the bottom among large state categories** on the second edition of the FLN index.
- **Among smaller states, Punjab was at the top** of the index while Telangana was at the bottom while **Puducherry topped the index among union territories** while Ladakh was the worst performer.
- **Among north-eastern states, Sikkim was at the top** while Meghalaya was at the bottom of the index. As per the report, **India's overall average score was 44.48 and 18 out of 36 state/UTs have scored above country average in FLN index.**
- The index has ranked states on **five key parameters** – educational infrastructure, access to education, basic health, learning outcomes and governance and 36 indicators.
- It is further recommended to undertake various assessments pertaining to the linguistic system (includes phonology, vocabulary/lexicon, and syntax), the orthographic system (includes symbols and mapping principles), and the writing mechanisms and move the focus to improving the periodicity of NAS and the sample size of FLS for assessing the learning outcomes effectively.

About IFC-

- Institute for Competitiveness, India is an international initiative centered in India, dedicated to enlarging and purposeful disseminating of the body of research and knowledge on competition and strategy, as

pioneered over the last 25 years by Professor Michael Porter of the Institute for Strategy and Competitiveness at Harvard Business School.

- It conducts & supports indigenous research; offers academic & executive courses; provides advisory services to the Corporate & the Governments and organizes events.

9.14 Revised Guidelines on MPLADS 2023

In news- Ministry of Statistics & Programme Implementation has recently released the Revised Guidelines on Members of Parliament Local Area Development Scheme (MPLADS)-2023.

The revised Guidelines-

- The revised set of guidelines aims to broaden the scope of the Scheme so as to enable the MPs to recommend the developmental works as per the changing needs of the community.
- A new Web-Portal, for implementation of the Revised Fund Flow Procedure under MPLADS was also launched.
- The entire process of fund flow under the revised guidelines will operate through the web portal, which will facilitate real-time monitoring, greater transparency and accountability in the system, and improved efficiency and effectiveness of the Scheme.

About MPLAD Scheme-

- The scheme was launched in 1993-94.
- The objective is to enable the Members of Parliament (MP) to suggest and get executed developmental works of ca
- Under the scheme, **each MP has the choice to suggest to the District Collector for works to the tune of Rs.5 Crores per annum to be taken up in his/her constituency.**
- The Rajya Sabha MPs can recommend works in one or more districts in the State from where he/she has been elected.
- The Nominated Members of the Lok Sabha and Rajya Sabha may select any one or more Districts from any one State in the Country for implementation of their choice of work under the scheme.
- The MPLAD Division, Ministry of Statics and Programme Implementation is entrusted with the responsibility of implementation of the scheme.
- MPs can recommend work of up to 25 lakh for Natural Calamity in the state and upto Rs. 1 crore in the country in case of Calamity of Severe Nature.
- MPs need to recommend work worth at least 15% and 7.5% of their funds to create assets in areas inhabited by SCs and STs respectively.
- Funds for MPLADS can be converged with MGNREGA for creating more durable assets and with the National Program for Development of Sports (Khelo India).
- The annual entitlement of Rs 5 crore shall be released, in two equal installments of Rs 2.5 crore each, by Government of India directly to the District Authority of the Nodal District of the MP concerned.
- The **District Authority shall be responsible for timely and effective implementation of such works.**

10. SCIENCE AND TECHNOLOGY

10.1 What are Quasicrystals?

In news- Scientists have discovered a third natural source of quasicrystals, extending the latter's reputation for violent origins.

What are quasicrystals?

- Crystal matter formed atomically in a manner somewhere between the amorphous solids of glasses (special forms of metals and other minerals, as well as common glass) and the precise pattern of crystals.
- Quasicrystals imbue a symbolic power.
- They're not like other crystals (their name means 'almost crystals') yet they share important properties.
- In solids, the constituent atoms are confined to a fixed arrangement.
- In crystals, the atoms are arranged in a pattern that periodically repeats itself.
- In quasicrystals, the atoms are arranged in a pattern that repeats itself at irregular, yet predictable, intervals.
- Quasicrystals may not be oppressed, kept in a state of stress, but the structure of their atomic lattice still contains the imprints of some stressful event.

10.2 MicroLEDs

In news- Apple's shift to MicroLED display technology is reportedly under process.

What is MicroLED display?

- MicroLEDs are self-illuminating diodes that have brighter and better colour reproduction than Organic Light Emitting Diode (OLED) display technology.
- The basis of microLED technology are sapphires.
- A sapphire can shine on its own forever.
- A microLED screen is filled with such small but strong light.
- The picture in a microLED screen is generated by several individual light-emitting diodes.
- Samsung, the pioneer in microLED technology explained that a microLED is as small as cutting a centimetre of hair into 200 smaller pieces.
- Each of these microLEDs are semiconductors that receive electric signals.
- Once these microLEDs are gathered, they form a module and several modules are then combined to form screens.
- MicroLED displays are brighter, have better colour reproduction and provide better viewing angles.
- MicroLEDs have limitless scalability, as they are resolution-free, bezel-free, ratio-free, and even size-free.
- In addition to being self-emissive, MicroLEDs also individually produce red, green, and blue colours without needing the same backlighting or colour filters as conventional displays, according to Samsung.
- Samsung is currently the world's most advanced manufacturer of displays, and has been producing its own version of microLED for TVs.

10.3 Per- and polyfluorinated alkyl substances (PFAS)

In news- An Oxford University-led study has found alarming levels of toxic PFAS, **also known as "forever chemicals"** in the ice around Svalbard, Norway which pose a risk to the region's wildlife.

What is PFAS?

- **The PFAs refer to a class of around 12,000 chemicals which are often found in consumer products** which resist water, heat or stains and are also called "forever chemicals" since they do not naturally break down over time.
- Additionally, **these chemicals are linked to a number of diseases including cancer, liver disease, etc.**
- Therefore, these contaminants, once passed on, can affect the entire food web from small organisms like plankton or fish to apex predators in the region like polar bears.
- Notably, high levels of PFAs have been found in the polar bear's bloodstream.

What does the study say?

- The study found the levels of these "forever chemicals" in the ice were higher than the United States advisory drinking water limits were.

- The study noted the “doubling up effect” on animals as climate changes and ice melts since the climate has reportedly been warming up in Svalbard faster than the world average.
- It also found high levels of TFA, a refrigeration byproduct caused by hydrofluoroolefin (HFOs) after chlorofluorocarbons (CFCs), a potent greenhouse gas used for refrigeration, was phased out.
- The HFOs, which are also greenhouse gasses once released, can turn into TFA, the levels of which the study finds have been increasing in the Arctic.
- Additionally, TFA and other PFAS compounds are highly mobile and can even move through the atmosphere to anywhere in the world.
- While TFA is said to be less toxic when compared to several other PFAs, its limited knowledge needs addressing, said the authors, as no one is fully aware of the damage these compounds might be causing to the environment.

10.4 New definition of broadband

In news- The definition of broadband now requires a minimum speed of 2Mbps from telecom operators, after previously requiring a fourth of that bandwidth, 512Kbps, since 2013.

What is the new definition?

- As per the new definition, broadband is a data connection that is able to support interactive services including Internet access and has the capability of the minimum download speed of 2 Mbps to an individual subscriber from the point of presence (POP) of the service provider intending to provide Broadband service.
- While broadband is generally understood to mean home WiFi connections, government statistics include faster mobile internet connections in the category.
- Wired broadband and wireless broadband will both be subject to this 2Mbps limit.
- The Telecom Regulatory Authority of India (TRAI) had formally recommended the new speed to the DoT in September 2021. By the previous definition, there were 825.38 million broadband users in India in November 2022
- The National Telecom Policy 2012 had set a goal of updating the definition of broadband to 2Mbps by 2015.

What are white spots and grey spots?

Places without cellular connectivity at all are called “white spots”. But harder to map are the “grey spots”, areas which show that simply being “connected” still may not let users get enough out of their access.

10.5 Data Embassies

In news- The Union budget 2023-24 has proposed to facilitate setting up of data embassies.

About data embassy-

- A data embassy is a solution implemented by nation-states to ensure a country's digital continuity with particular respect to critical databases.
- It consists of a set of servers that store one country's data and are under that country's jurisdiction while being located in another country.
- Data embassies create a new approach to securing data by leveraging diplomatic agreements bolstered by cloud technology solutions.
- According to a Google Cloud blog post, small countries around the world are turning to the concept of data embassies because they are in need of sovereign and resilient infrastructure.
- Cloud computing is being quickly embraced by businesses for its speed, scale, and financial advantages. Governments are doing the same.

- In 2015, Microsoft and Estonia, one of the world's most mature countries in digital administration, partnered on the virtual data embassy research project.
- Luxembourg, Monaco and some other nations have adopted the data embassy model.

WHAT ARE DATA EMBASSIES?



▶ **A data embassy enables a country to host a backup of its most critical data and services** in data centres abroad, from where it can be recovered in extreme disaster scenarios

▶ **They have diplomatic immunity: Data embassies enjoy diplomatic immunity from local laws**, on the principles of The Vienna Convention on Diplomatic Relations that grants diplomatic agents safe passage and freedom of travel in a foreign land and protection from local lawsuits and prosecution

▶ **Estonia was the 1st country to establish a data embassy in Luxembourg in 2017**

▶ **The Kingdom of Bahrain introduced a legislation in 2018 that says data on the cloud should be subject to the exclusive jurisdiction of the data principal's domicile country**

10.6 A nationwide campaign to end filariasis

In news- Ministry of Health & Family Welfare launched a nationwide Mass Drug Administration (MDA) campaign to Eliminate Lymphatic Filariasis (LF).

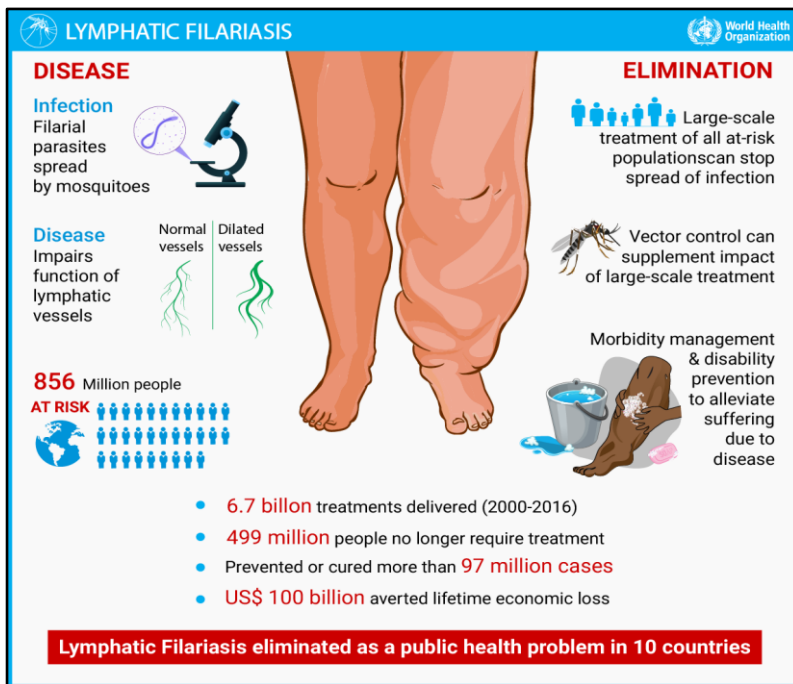
About the campaign-

- It is aimed at ending disease transmission through the door-to-door administration of anti-filarial drugs, especially in 10 filaria affected states.
- This launch comes a month after the program received resounding support from the Hon'ble Health Minister to eliminate Filariasis by 2027, three years ahead of the global target.
- High-burden districts in Bihar, Chhattisgarh, Jharkhand, Maharashtra, Uttar Pradesh, West Bengal, Karnataka, Odisha, Madhya Pradesh, and Andhra Pradesh jointly launched the campaign.
- India has ramped up efforts in eliminating Lymphatic Filariasis a Vector Borne Disease caused by Culex mosquitoes which causes disability well ahead of global targets to safeguard communities from disability, social and economic insecurity.
- The Government of India has already unveiled a renewed five-pronged strategy for elimination of LF.

What is Filariasis?

- Lymphatic filariasis, commonly known as elephantiasis, is a neglected tropical disease.
- Infection occurs when filarial parasites are transmitted to humans through mosquitoes.
- Infection is usually acquired in childhood causing hidden damage to the lymphatic system.
- It impairs the lymphatic system and can lead to the abnormal enlargement of body parts, causing pain, severe disability and social stigma.
- Lymphatic filariasis is caused by infection with parasites classified as nematodes (roundworms) of the family Filarioididea.
- There are 3 types of these thread-like filarial worms:

- *Wuchereria bancrofti*, which is responsible for 90% of the cases
- *Brugia malayi*, which causes most of the remainder of the cases
- *Brugia timori*, which also causes the disease.
- Lymphatic filariasis is transmitted by different types of mosquitoes, for example by the *Culex* mosquito, widespread across urban and semi-urban areas, *Anopheles*, mainly found in rural areas, and *Aedes*, mainly in endemic islands in the Pacific.
- Lymphatic filariasis infection involves asymptomatic, acute, and chronic conditions.
- The majority of infections are asymptomatic, showing no external signs of infection while contributing to transmission of the parasite.
- These asymptomatic infections still cause damage to the lymphatic system and the kidneys and alter the body's immune system.



10.7 Experimental contraceptive drug for male

In news- Researchers from Weill Cornell Medicine, US, have created an experimental contraceptive drug candidate for males.

Key findings-

- It temporarily stops sperm in their tracks and prevents pregnancies in preclinical models.
- This means that a new kind of contraceptive for men, currently available through physical barriers (condoms) and surgical options (vasectomy), could be developed, similar to how a pill exists for women.
- Basically, this study was an attempt to show a proof-of-concept, and whether the idea of such a pill could practically work.
- The aim here was to work on slowing the mobility or movement of sperms or the male gamete, which fertilises the female gamete or egg during human reproduction.

Why has the male contraceptive pill been difficult to develop?

- In 1960, the oral contraceptive pill was approved for release.
- The pill worked through regulation of the hormones progesterin and estrogen, preventing fertilization of the egg by the sperm.
- Women produce one egg per month while men produce sperm in much larger numbers and hence, developing a method for men is more challenging.

10.8 Hallucinating chatbots

In news- It has been warned by Google that artificial intelligence in chatbots can sometimes lead to “hallucination”.

About hallucinating chatbots-

- Hallucination in AI chatbots is when a machine provides convincing but completely made-up answers.
- In 2022, Meta released their AI conversational chatbot called BlenderBot 3.
- At the time the company shared that BlenderBot 3 was capable of searching the internet to chat with users about any topic and would learn to improve its skills and safety through feedback from users.
- However, even at that time, Meta engineers had warned that the chatbot should not be relied upon for factual information and that the bot could apparently “hallucinate”.
- An example of this was seen in 2016 when after being live on Twitter for just 24 hours, Microsoft’s chatbot Tay started parroting racist and misogynistic slurs back at users.

Why do AI chatbots start hallucinating?

- A defining feature of sophisticated generative natural language processing (NLP) models, hallucinations, can occur because these models require the capability to rephrase, summarise and present intricate tracts of text without constraints.
- An AI chatbot could possibly take widely available information rather than factual information as an input.
- The problem becomes especially acute when complex grammar or arcane source material is used.
- Therefore, AI models can start presenting and even believing in ideas or information that may be incorrect but which are fed to them by a large number of user inputs.
- And since these models are unable to distinguish between contextual information and facts, they respond to queries with incorrect answers.

10.9 The first global summit on Responsible Artificial Intelligence in the Military Domain (REAIM)

In news- The world’s first international summit on the responsible use of artificial intelligence in the military was held in the Netherlands.

The REAIM 2023-

- It brought together governments, corporations, academia, startups, and civil societies to raise awareness, discuss issues, and possibly, agree on common principles in deploying and using AI in armed conflicts.
- The two-day summit explored advances in AI and machine learning models, understand their limitations, and the possibilities of building a human-machine team.
- It was organised by the Netherlands government and was co-hosted by the Republic of Korea and took place at the World Forum in The Hague, the international city of peace and justice.
- It’s the first global attempt to prevent the proliferation of lethal autonomous weapons (LAWS) and insert ethics, responsibility, accountability and the moral factor into a rapidly developing weaponisation technology that has potential for cataclysmic damage.

10.10 India’s first hybrid-sounding rocket

In news- India’s first hybrid sounding rocket by private players was launched from Pattipulam village in the Chengalpattu district of Tamil Nadu.

Key updates-

- Martin Foundation, in association with Dr. APJ Abdul Kalam International Foundation and Space Zone India, launched the **Dr. APJ Abdul Kalam Satellite Launch Vehicle Mission- 2023**.
- The selected students designed and constructed a **student satellite launch vehicle (rocket) and 150 PICO satellite research experiment cubes** that contained different payloads.
- The **reusable rocket** was made by the selected top 100 students, while the rest made the satellites.
- **The rocket can be used for research in weather, atmospheric conditions and radiation.**

What are sounding rockets?

- Sounding rockets are one or two stage solid propellant rockets used for probing the upper atmospheric regions and for space research.
- They also serve as easily affordable platforms to test or prove prototypes of new components or subsystems intended for use in launch vehicles and satellites.
- A hybrid-propellant rocket is a rocket with a rocket motor that uses rocket propellants in two different phases: one solid and the other either gas or liquid.
- With the establishment of the Thumba Equatorial Rocket Launching Station (TERLS) in 1963 at Thumba, a location close to the magnetic equator, there was a quantum jump in the scope for aeronomy and atmospheric sciences in India.
- The launch of the first sounding rocket from Thumba near Thiruvananthapuram, Kerala on 21 November 1963, marked the beginning of the Indian Space Programme.

10.11 Vinyl chloride

In news- Vinyl chloride, the chemical in several of the train cars that derailed and burned in East Palestine, Ohio, in February 2023 can wreak havoc on the human liver.

What is Vinyl chloride?

- Vinyl chloride is an organochlorine with the formula $H_2C=CHCl$.
- It is also called vinyl chloride monomer of chloroethene.
- This **colourless compound is an important industrial chemical chiefly used to produce the polymer polyvinyl chloride.**
- It is among the top twenty largest petrochemicals in world production.
- **Vinyl chloride is used to produce PVC, a hard plastic used for pipes,** as well as in some packaging, coatings and wires.

Its impact on human health-

- It has been shown to cause liver cancer, as well as a nonmalignant liver disease known as TASH, or toxicant-associated steatohepatitis.
- With TASH, the livers of otherwise healthy people can develop the same fat accumulation, inflammation and scarring (fibrosis and cirrhosis) as people who have cirrhosis from alcohol or obesity.
- However, exposures to lower environmental concentrations are still a concern.
- Recent research has demonstrated that exposure to vinyl chloride, even at levels below the federal limits for safety, can enhance liver disease caused by a "Western diet" – one rich in fat and sugar.
- In outdoor air, vinyl chloride becomes diluted fairly quickly. Sunlight also breaks it down, typically in nine to 11 days.
- Therefore, outdoor air exposure is likely not a problem except with intense periods of exposure, such as immediately following a release of vinyl chloride.
- Vinyl chloride is also dispersed in water.

10.12 North India's first nuclear plant

In news- North India's first Nuclear Plant is **coming up in Haryana in the town of Gorakhpur**, which is about 150 km north of the national capital of New Delhi. **Gorakhpur Haryana Anu Vidyut Pariyojana (GHAVP) having two units of 700 MWe capacity** each of **Pressurised Heavy Water Reactor (PHWR)** indigenous design is under implementation near Gorakhpur village in Fatehabad district in Haryana.

Major Nuclear reactors in India-

The Kudankulam Nuclear Power Plant (KKNPP)-

- It is the largest nuclear power station in India, situated in Kudankulam in the Tirunelveli district of the southern Indian state of Tamil Nadu.
- KKNPP is scheduled to have six VVER-1000 reactors built in collaboration with Atomstroyexport, the Russian state company and Nuclear Power Corporation of India Limited (NPCIL), with an installed capacity of 6,000 MW of electricity.

Tarapur Nuclear Reactor-

- Located in Maharashtra, it is the **oldest nuclear facility in India**, having commenced commercial operations in 1969.
- It is currently the second most powerful in India, with two BHWR of 160MW and two PHWR reactors of 540MW forming a total of 1,400MW.
- The nuclear plant is the result of India's collaboration with the US.

Rawatbhata Atomic Power Plant-

- Located in Rajasthan, it has a total installed capacity of 1180MW. Formed of six PHWR reactors with two more reactors planned, the first reactor was commissioned back in December 1973.
- Earlier India collaborated with Canada for this plant.
- In 1974 after India conducted Smiling Buddha, its first nuclear weapons test Canada stopped their support of the project.

Kaiga Atomic Power Plant-

- Located in Karnataka, it is formed of four 220MW PHWR reactors making a total of 880MW.
- The plant has been in operation since March 2000 and is operated by the Nuclear Power Corporation of India Limited (NPCIL).

Kalpakkam Nuclear Power Plant-

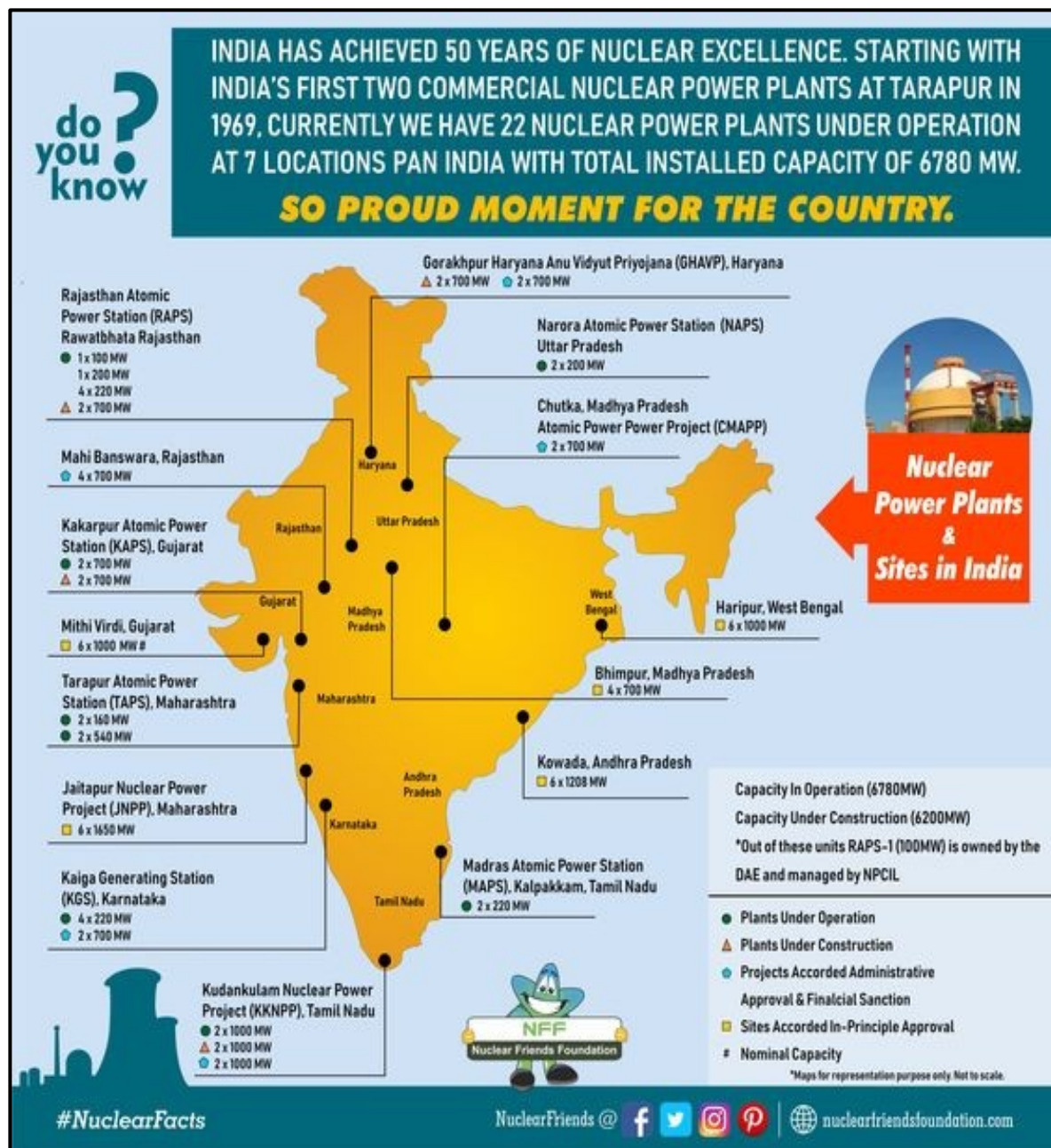
- Located in Tamilnadu, it first began operating in 1984 and currently has two 235 MW reactors, with two more reactors of 500 MW and 600 MW to be added at a later date.
- It has a prototype fast breeder reactor (PFBR) which does not produce highly radioactive nuclear waste and can produce 70% more energy.

Narora Nuclear Reactor-

- Located in Uttar Pradesh, it has two PHWR which offer a total capacity of 440MW.
- It is considered **one of the safest nuclear plants in the country and won a Golden Peacock award for environment management in the year 2000.**

Kakrapar Atomic Power Plant-

- The power plant in Gujarat, Western India has two PHWR reactors with a total installed capacity of 440MW.
- It is developed and operated by NPCIL.



10.13 CCR5 mutation

In news- A 53-year-old man from Germany, referred to as the Dusseldorf patient, has become at least the third person to have been “cured of HIV” with bone-marrow transplant from people carrying a specific HIV-resistant genetic mutation.

What is CCR5 mutation and how does it fight off HIV?

- HIV (Human Immunodeficiency Virus) **mainly attacks the CD4 immune cells in the human body**, thereby reducing a person’s ability to fight off secondary infections.
- **The CCR5 receptors on the surface of the CD4 immune cells** act as a doorway for the HIV virus.

- However, the CCR5-delta 32 mutation prevents these receptors used by the HIV virus from forming on the surface, effectively removing the doorway.
- Only 1 per cent of the people in the world carry two copies of the CCR5-delta 32 mutation – meaning they got it from both their parents – and another 20 per cent carry one copy of the mutation, mainly those of European descent.
- Those with the mutation hence are almost immune to the infection, although some cases have been reported.

Can such transplants solve the HIV crisis-

- With the mutation existing in very few people and nearly 38.4 million people living with HIV across the world, it would be very difficult to find a matching donor in the first place.
- Add to that the fact that the **mutation occurs mainly among Caucasians**, and the donor pool shrinks further for many, especially those from countries with high HIV burden.
- However, even if donors were to become available, **experts believe it is highly unlikely that bone marrow transplants can be rolled out for all those with HIV.**
- This is because it is a major procedure with high risks associated, especially that of the person rejecting the donated marrow.
- There is also the likelihood of the virus mutating to enter the cells through other mechanisms in such persons.

• The current treatments for HIV-

- Although there are no cures for the infection at present, the **disease can be managed using antiretroviral therapy.**
- **These medicines suppress the replication of the virus within the body**, allowing the number of CD4 immune cells to bounce back.
- Although earlier the drugs were given only to those with low CD4 count under the government's programme, now the programme supports anyone who has been diagnosed with HIV.
- **The drugs have to be taken for life because the virus continues to persist in reservoirs across the body.**
- If the drugs are stopped, the virus can again start replicating and spreading. When the viral levels are low, the likelihood of a person transmitting the infection is also low.
- If left untreated, the virus destroys a person's immune system and they are said to be in the Acquired Immunodeficiency Syndrome stage (AIDS) where they get several opportunistic infections that may result in death.
- **Although there is no vaccine for HIV, there are Pre-exposure prophylaxis (or PrEP) medicines that can be taken by people at high risk of contracting the infection.**
- PrEP reduces the risk of getting HIV from sex by about 99 percent.

10.14 First ever Indigenous - Automatic Train Supervision (ATS)

In news- Bharat Electronics announced that the Delhi Metro launched India's first ever indigenously developed Train Control & Supervision System.

About i-ATS-

- It was **jointly developed by the Bharat Electronics & Delhi Metro Rail Corporation (DMRC)**, the i-ATS for operations on its first corridor, Red Line (Rithala to Shaheed Sthal).
- Beginning with the Red Line, the i-ATS System will further be deployed for operations on Delhi Metro's other operational corridors and the upcoming independent corridors of Phase - 4 Project as well.
- In addition, i-ATS can be used in operations of other rail based systems including Indian Railways.
- This technology has been developed with flexibility to work with different Signalling vendor's systems with suitable changes.

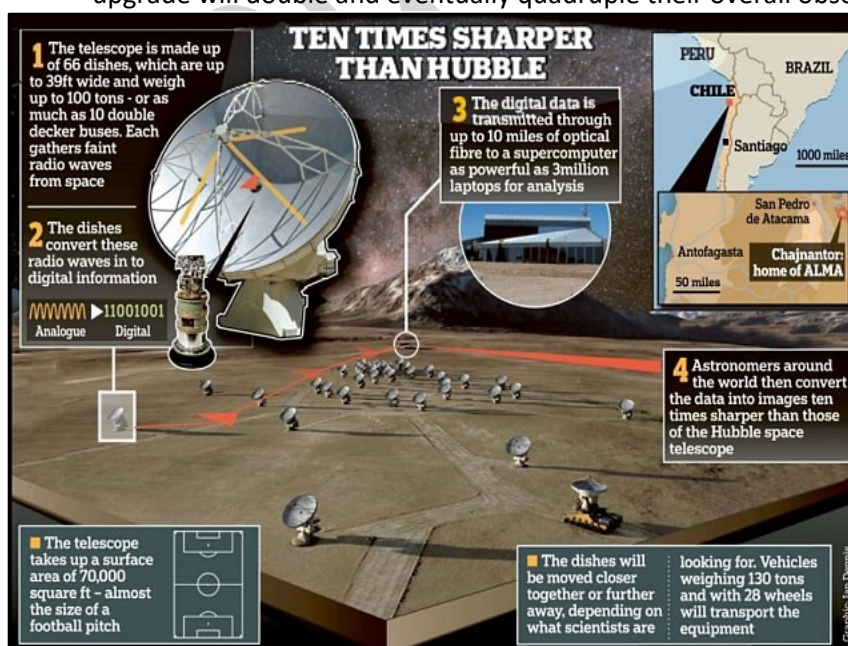
- With the launch of i-ATS, **India becomes the sixth country which has its own ATS products after France, Germany, Japan, Canada, and China.**
- With this development, the country has moved a step forward for an **indigenously built CBTC (Communication Based Train Control) based signalling system for the Metro railway.**
- **The ATS (Automatic Train Supervision), is a computer-based system which manages train operations.**

10.15 The Atacama Large Millimetre/submillimetre Array (ALMA)

In news- The ALMA, a radio telescope comprising 66 antennas located in the Atacama Desert of northern Chile is set to get software and hardware upgrades.

About the ALMA-

- **ALMA is a state-of-the-art telescope that studies celestial objects at millimetre and submillimetre wavelengths** — they can penetrate through dust clouds and help astronomers examine dim and distant galaxies and stars out there.
- It also has **extraordinary sensitivity, which allows it to detect even extremely faint radio signals.**
- As mentioned before, the **telescope consists of 66 high-precision antennas, spread over a distance of up to 16 km.**
- ALMA is **operated under a partnership among the United States, 16 countries in Europe, Canada, Japan, South Korea, Taiwan, and Chile.**
- **Fully functional since 2013, the radio telescope was designed, planned and constructed by the US's National Radio Astronomy Observatory (NRAO), the National Astronomical Observatory of Japan (NAOJ) and the European Southern Observatory (ESO).**
- Over the years, it has **helped astronomers make groundbreaking discoveries, including that of starburst galaxies and the dust formation inside supernova 1987A.**
- ALMA is **situated at an altitude of 16,570 feet (5,050 metres) above sea level on the Chajnantor plateau in Chile's Atacama Desert** as the millimetre and submillimetre waves observed by it are very susceptible to atmospheric water vapour absorption on Earth.
- **Moreover, the desert is the driest place in the world, meaning most of the nights here are clear of clouds and free of light-distorting moisture** — making it a **perfect location for examining the universe.**
- The **most significant modernisation made to ALMA will be the replacement of its correlator, a supercomputer that combines the input from individual antennas and allows astronomers to produce highly detailed images of celestial objects.**
- **Today, ALMA's correlators are among the world's fastest supercomputers. Over the next 10 years, the upgrade will double and eventually quadruple their overall observing speed.**



Some of the notable discoveries made by ALMA-

- One of the earliest findings came in 2013 when it discovered starburst galaxies earlier in the universe's history than they were previously thought to have existed.
- These newly discovered galaxies represent what today's most massive galaxies looked like in their energetic, star-forming youth.
- In 2014, ALMA provided detailed images of the protoplanetary disc surrounding HL Tauri — a very young T Tauri star in the constellation Taurus, approximately 450 light years from Earth and transformed the previously accepted theories about the planetary formation.
- In 2015, the telescope helped scientists observe a phenomenon known as the Einstein ring, which occurs when light from a galaxy or star passes by a massive object en route to the Earth, in extraordinary detail.
- More recently, as part of the Event Horizon Telescope project, a large telescope array consisting of a global network of radio telescopes, it provided the first image of the supermassive black hole at the centre of our own Milky Way galaxy. The image was unveiled by scientists in May 2022.

10.16 Borthekera

In news- *Garcinia pedunculata*, a medicinal plant commonly called Borthekera in Assamese language, found to have cardioprotective potential.

About Borthekera-

- Borthekera is an evergreen tree related to the more familiar purple mangosteen (*Garcinia mangostana*).
- The tree is **endemic to the south-eastern regions of Asia such as parts of Myanmar and north-eastern parts of India.**
- Traditionally forbidden for raw consumption, it has been found to protect from heart diseases.
- **Administration of the dried pulp of the ripe fruit of the medicinal plant reduced cardiac hypertrophy indicators and oxidative stress** and heart inflammation.
- **The sun-dried slices of the ripe fruit are used for culinary and medicinal purposes** and are **known to have therapeutic properties like anti-inflammatory, anthelmintic, antibacterial, antifungal, antidiabetic, hypolipidemic, nephroprotective, and even neuroprotective activity.**
- Multiple studies have been reported that *G. pedunculata* is a **rich source of antioxidants.**
- Scientists of Institute of Advanced Study in Science and Technology (IASST), an autonomous institute of the Department of Science and Technology (DST), explored this medicinal plant's potential to prevent heart diseases.

11. SECURITY

11.1 TARKASH exercise

In news- Sixth edition of the TARKASH exercise by the National Security Guard (NSG) and US Special Operations Forces (SOF) took place in Chennai.

About the Exercise-

- The Indo-US joint exercise has for the first time included “Chemical, Biological, Radiological and Nuclear (CBRN) terror response” in its drill.
- The objective of the joint exercise by NSG and US (SOF) teams was to rapidly neutralise the terrorists, rescue the hostages safely and deactivate the chemical weapons being carried by the terrorists.

CBRN weapons-

- CBRN weapons, which are also classified as **weapons of mass destruction**, have been used by States and terror elements in the past.
- The most recent use of CBRN in the form of a **sarin gas attack was witnessed in Syria in 2017** when more than 100 people died.
- In general, a weapon of mass destruction is a nuclear, radiological, chemical, biological, or other device that is intended to harm a large number of people.
- The expression “weapon of mass destruction” (WMD) is usually considered to have been used first by the leader of the Church of England, the Archbishop of Canterbury, in 1937 to refer to the aerial bombing of civilians in the Basque town of Guernica by German and Italian fascists in support of General Franco during the Spanish Civil War.

International treaties related to WMD-

- The Geneva Protocol, 1925, that banned the use of chemical and biological weapons.
- The Biological Weapons Convention, 1972.
- Chemical Weapons Convention, 1992, which put comprehensive bans on the biological and chemical weapons respectively.
- India has signed and ratified both the 1972 and 1992 treaties.
- The use and proliferation of nuclear weapons is regulated by treaties such as Nuclear Non-Proliferation Treaty (NPT) and the Comprehensive Test Ban Treaty (CTBT).

11.2 Siang Unying Festival

In news- The Union Minister of Ports, Shipping & Waterways attended the colourful Siang Unying Festival - which is an important festival of the Adi community at Boleng, Arunachal Pradesh.

About Siang Unying Festival-

- The festival of Unying is **celebrated to herald the season of cultivation, beginning of the Adi community's new year**, arrival of spring seasons as well as a great way to strengthen the bond among the community.
- **The Araan festival also marks the beginning of New Year and the arrival of spring season, the season of joyousness and youthfulness where male elders perform 'Bari' songs and 'Yakjong' dance in villages**, besides praying for the well-being of people both materially and spiritually.
- In this festival, it is **customary for all male members of a family to go on a hunting spree (open season) and stay in the jungles for one week**.
- When they return home they come back with various kills such as deers, birds, squirrels, fish etc.
- The children **perform "Yakjong" (house to house) wearing colorful traditional attire and bless the house where they perform**.
- **The hunted birds, rodents, squirrels are prepared as gift "Aaman" for children** and they carry and plays with it during the day.
- The festivity brings brotherhood among the villagers as hunted meats and rice beer '**Aapong**' are shared among each other, especially '**Aapongs**' are gifted to uncles (maternal).

The Adi people-

- The Adi people are one of the most populous groups of indigenous peoples in the Indian state of Arunachal Pradesh.
- A few thousand are also found in the Tibet Autonomous Region, where they are called the Lhoba together with some of the Nishi people, Na people, Mishmi people and Tagin people.
- **The term "Adi" however, is not to be confused with the Lhoba people**, since the Lhoba also includes the Mishmi along with the Adi people.

- All the ethnic groups recognizing themselves as "Adi" are believed to be descendants of the Abutani/Abotani.
- **The various languages and dialects of the Adi people fall into two groups:** Abor (Abor-Minyong, Bor-abor (Padam), Abor-Miri, etc.) and Lhoba (Lho-Pa, Luoba).
- **Their prime festivals are Aran, Donggin, Solung, Podi Barbii and Etor.**
- Solung is observed in the first week of September for five days or more. It is a harvest festival performed after the sowing of seeds and transplantation, to seek for future bumper crops.
- **The majority of Adi traditionally follow the tribal Donyi-Polo religion.**

12. SOCIETY

12.1 The Parhaiyas of Jharkhand

In news- 'Food and Social Security at the Margins: The Parhaiyas of Jharkhand' is one such study that examines the level of penetration and coverage of government schemes and the bottlenecks that hinder its implementation.

About Parhaiya tribe-

- Parhaiya is one of the nine **Particularly Vulnerable Tribal Groups (PVTGs)** earlier referred as Primitive Tribal Group-PTG of Jharkhand state.
- It is a community that has the claim of being the earliest inhabitants of the region and finds mention in Megasthenes' book as well as Hiuen Tsang's travelogue.
- They go on hunting-expeditions, practice share-cropping as well as shifting cultivation, live in mud houses, collect firewood from forest and practice herbal medicine.
- They celebrate **Magahī Parab (festival)** with ecstatic joy and vivacious song and dance.

Who are PVTGs?

- PVTG is a sub-classification of a Scheduled Tribe or section of a Scheduled Tribe that is considered more vulnerable than a regular Scheduled Tribe.
- The PVTG list was created by the Indian Government with the purpose of better improving the living standards of endangered tribal groups based on priority.
- The **Dhebar Commission (1960-1961)** found that within the Scheduled Tribe classification an inequality existed in the rate of development of certain tribes over others.
- As a result in the fourth Five Year Plan the sub-category "Primitive tribal group" was created within the grouping of Scheduled Tribe to identify groups considered to be especially lacking in modern development.
- There are 75 tribes in this group.
- **The 75th group recognised as PTG were the Maram in Manipur in 1993-94.**
- In 2006 the government of India changed the name of "Primitive tribal group" to "Particularly vulnerable tribal group."

13. SPORTS

13.1 Hyderabad hosts the first-ever E-Prix race(Formula E)

In news- The first-ever ABB FIA Formula E World Championship race in India took place in Hyderabad.

About Formula E World Championship-

- E-Prix is the electric equivalent of a Formula 1 race.
- Hyderabad became the 30th location to host an E-Prix.
- The 'E' in Formula E stands for electric - with the entirety of the racing car powered by a battery.
- Formula 1 did introduce a hybrid motor in 2014, and in attempts to 'greenify', it's aiming for carbon neutral synthetic fuels from 2026. But F1 still is fundamentally a non-electric sport.
- The other major difference is Formula E has a common spec for all its teams and drivers - the same chassis and battery.
- The ABB FIA Formula E World Championship is accelerated by Greenko - an energy transition and decarbonization solutions provider.

What is a Formula One race?

- Formula One (more commonly known as Formula 1 or F1) is **the highest class of international racing for open-wheel single-seater formula racing cars** sanctioned by the Fédération Internationale de l'Automobile (FIA).
- The FIA Formula One World Championship has been one of the premier forms of racing around the world since its inaugural season in 1950.
- The word 'formula' in the name refers to the set of rules to which all participants' cars must conform to.
- A Formula One season consists of a series of races, known as Grands Prix, that take place in multiple countries and continents around the world on either purpose-built circuits or closed public roads.
- A points system is used at Grands Prix to determine two annual World Championships: one for the drivers, and one for the constructors (the teams).
- **Each driver must hold a valid Super Licence**, the highest class of racing licence issued by the FIA, and the races must be run on tracks graded "1", the highest grade-rating issued by the FIA for track.

14. PLACES IN NEWS

14.1 The Eastern Rajasthan Canal Project (ERCP)

In news- The Rajasthan government has allocated Rs 13,000 crore for the Eastern Rajasthan Canal Project in the state Budget 2023-24 but wants the Centre to share the cost of the project.

About the project-

- It aims to harvest surplus water available during the rainy season in rivers in southern Rajasthan, such as the Chambal and its tributaries Kunnu, Parvati, and Kalisindh, and use it in the water-scarce south-eastern districts of the state.
- The project was approved by the Central Water Commission in 2017.
- This scheme is planned to meet the Drinking / Irrigation and Industrial water needs of the thirteen districts of Southern & South Eastern Rajasthan.
- Rajasthan's geographical area is 10.4 percent of the entire country but holds only 1.16 per cent of India's surface water and 1.72 percent of groundwater.
- Among the state's water bodies, only the Chambal river basin has surplus water, but this water cannot be tapped directly because the area around the Kota barrage is designated as a crocodile sanctuary.
- Through the help of diversion structures, interbasin water transfers, linking channels, and building pumping main feeder channels, the ERCP aims to create a network of water channels that will cover 23.67 per cent of the area and 41.13 per cent of the population of the state.
- ERCP will help fulfil the long-term irrigation and drinking water needs of 13 districts and the surplus water in the sub basins of Kunnu, Kul, Parvati, Kalisindh and Mej rivers received during monsoon has to be carried to the sub basin of Banas, Morel, Banganga, Gambhir and Parvati rivers.

- The project will help to irrigate nearly 2.8 lakh hectares of land through 26 different large and medium projects.
- Proposed to be completed in three phases in seven years from 2017 to 2023.

14.2 Mukaab – a cube-shaped super-city

In news- Recently, Saudi Arabia has unveiled its latest grand plan to transform its capital city.

About the new city project-

- The new project coming up in Riyadh is called the Mukaab – “cube” in Arabic.
- **It will stand 400 metres high, wide and long, big enough to hold 20 Empire State Buildings.**
- **The Mukaab will be at the heart of the New Murabba Project**, a plan to create “the world’s largest and modern downtown” in Riyadh.
- **Set to be completed by 2030**, it will be helmed by Crown Prince Muhammad bin Salman.
- This is the latest among a string of ambitious architectural projects planned and undertaken by Saudi Arabia as a part of its Vision 2030, aimed at revolutionising the country’s economy and lifestyle.
- Recently, the **NEOM project (or The Line)** has dominated headlines for its futuristic design and **ambitious zero-carbon goals**.

What is the Mukaab?

- To be constructed in central Riyadh, the Mukaab “**will house over 100,000 residential units, 9,000 hotel rooms and 1.4 million square metres of office space**, as well as dozens of entertainment and culture venues.” There will also be 1.8 million sq. metres of space dedicated to community facilities, the press release by the Saudi government said.
- Spread over 19 sq. km, the new Murabba project will be built around the concept of sustainability and will add SAR 180 billion (roughly \$ 47 billion) to Saudi Arabia’s non-oil GDP, the press release claimed. The Mukaab will be the highlight of this project.
- It is currently unclear how much this project will cost or how the PIF will fund it.
- **The cubic shape of the Mukaab will “ensure the ultimate utilisation of space.**
- **It will be built using the modern Najdi architectural style** – a twist on the traditional Najdi architectural style from the Najd region in the centre of the Arabian peninsula.
- This architectural style was perfected over generations to be best suited for the region’s desert climate – its design focuses on naturally controlling the climate inside the structure.
- Hence, the cube shape is not just yet another futuristic concept for a city, it will serve a functional purpose by limiting energy requirements inside it.

14.3 Venice canals

In news-With some of Venice’s secondary canals almost drying up in the past few days, images of docked water taxis, gondolas and ambulance boats have garnered a lot of attention on social media.

About the famous canal and gondolas of Venice-

- Located in northern Italy, the city of Venice has a unique geography.
- It is a collection of over 118 small islands spread over a lagoon, which is a kind of water body that is separated from a larger water body through some kind of land formation.
- Covering 70,176.4 ha, Venetian lagoon is separated from the Adriatic Sea.
- According to UNESCO, temporary settlements in the 5th century gradually became permanent here, comprising land-dwelling peasants and fishermen.
- UNESCO states that **Venice and its lagoon landscape is the result of a dynamic process which illustrates the interaction between people and the ecosystem of their natural environment over time.**

Why have some Venetian canals gone dry?

- According to weather analysts, a high-pressure system is stuck over the city, creating low tides, which has led to low water levels.
- Experts believe that a prolonged long spell of low tides and lack of rain are responsible for the issue in the city.
- However, many say the root cause behind the issue is the drought-like situation across Italy.

Venice(City of Canals)-

- Venice, the capital of northern Italy's Veneto region, is built on more than 100 small islands in a lagoon in the Adriatic Sea.
- The islands are in the shallow Venetian Lagoon, an enclosed bay lying between the mouths of the Po and the Piave rivers (more exactly between the Brenta and the Sile).
- It has no roads, just canals – including the Grand Canal thoroughfare – lined with Renaissance and Gothic palaces.
- The central square, Piazza San Marco, contains St. Mark's Basilica, which is tiled with Byzantine mosaics, and the Campanile bell tower offering views of the city's red roofs.

