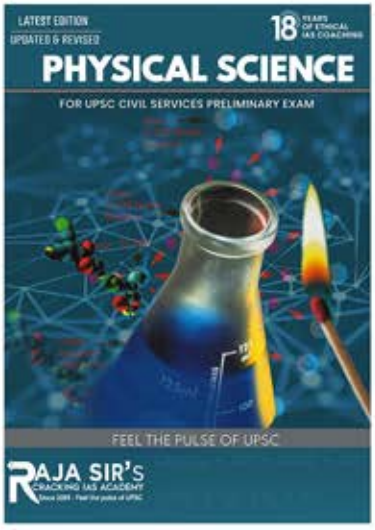
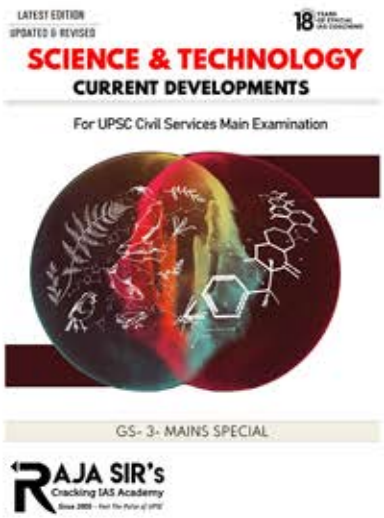
MONTHLY CURRENT AFFAIRS





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It refers to an FIR that is registered irrespective of the area where the offence is committed.....

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POLITY

Sedition law can be retained but with safeguards: Law Commission

The Section 124A of the Indian Penal Code (IPC) dealing with sedition needs to be retained but certain amendments could be made for greater clarity regarding its usage, the 22nd Law Commission has said in its report to the government.

The commission said sedition being a "colonial legacy" is not a valid ground for its repeal but in view of the misuse of Section 124A, the panel has recommended that the Centre issue model guidelines to curb any misuse.

Sedition Law

- **Historical Background:**
  - Sedition laws were enacted in **17th century England** when lawmakers believed that **only good opinions of the government should survive, as bad opinions were detrimental** to the government and monarchy.
  - The law was originally drafted in 1837 by Thomas Macaulay, the British historian-politician, but was inexplicably omitted when the **Indian Penal Code (IPC) was enacted in 1860.**
  - **Section 124A** was inserted in 1870 by an amendment introduced by **James Stephen** when it felt the need for a specific section to deal with the offence.
  - Today the Sedition is a crime under **Section 124A of the Indian Penal Code (IPC).**
- **Sedition Law Today:**
  - **Section 124A IPC:**
    - It defines sedition as an offence committed when "any person by words, either spoken or written, or by signs, or by visible representation, or otherwise, **brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection** towards the government established by law in India".
    - Disaffection includes disloyalty and all feelings of enmity. However, comments without exciting or attempting to excite hatred, contempt or disaffection, will not constitute an offence under this section.
  - **Punishment for the Offense of Sedition:**
    - It is a **non-bailable offence**. Punishment under Section 124A ranges from **imprisonment up to three years to a life term**, to which a fine may be added.
    - A person charged under this law is barred from a government job.

- They have to live without their passport and must appear in court at all times as and when required.

Significance and Issues with the Sedition Law

- **Significance:**
  - **Reasonable Restrictions:**
    - The constitution of India prescribes reasonable restrictions (under **Article 19(2)**) that can always be imposed on this right (Freedom of Speech and Expression) in order to ensure its responsible exercise and to ensure that it is equally available to all citizens.
  - **Maintaining Unity & Integrity:**
    - Sedition law helps the government in combating anti-national, secessionist and terrorist elements.
  - **Maintaining Stability of State:**
    - It helps in protecting the elected government from attempts to overthrow the government with violence and illegal means. The continued existence of the government established by law is an essential condition of the stability of the State.
- **Issues:**
  - **Relic of Colonial Era:**
    - Colonial administrators used sedition to lock up people who criticised the British policies.
    - Stalwarts of the freedom movement such as **Lokmanya Tilak**, **Mahatma Gandhi**, **Jawaharlal Nehru**, **Bhagat Singh**, etc., were convicted for their "seditious" speeches, writings and activities under British rule.
    - Thus, rampant use of the sedition law recalls the colonial era.
  - **Stand of Constituent Assembly:**
    - The Constituent Assembly did not agree to include sedition in the Constitution. The members felt it would curtail freedom of speech and expression.
    - They argued that the sedition law can be turned into a weapon to suppress people's legitimate and constitutionally guaranteed right to protest.
  - **Disregarding Supreme Court's Judgement:**
    - Supreme Court in ***Kedar Nath Singh vs State of Bihar*** case 1962, limited application of sedition to "acts involving intention

or tendency to create disorder, or disturbance of law and order, or incitement to violence".

- Thus, invoking sedition charges against academicians, lawyers, socio-political activists and students is in disregard of the Supreme Court's order.

- **Repressing Democratic Values:**
  - Increasingly, India is being described as an elected autocracy primarily because of the callous and calculated use of sedition law.

Increase jail term in sedition cases to 7 years

Sedition Law:

- **Section 124A of the Indian Penal Code (IPC)** deals with sedition.
- **History of Sedition Law:**
  - **Section 124A** was **drafted by Thomas Babington Macaulay** and included in the **IPC in 1870.**
  - The section was first included **to address the growth of Wahabi activity** between 1863 and 1870. The **colonial authorities faced a difficulty** as a result of these actions.
  - **Indian nationalist leaders were involved in some of the most well-known sedition cases** of the late 19th and early 20th centuries.
  - The **earliest of these was Jogendra Chandra Bose's trial in 1891**. He served as the newspaper Bangobasi's editor. **He published a piece denouncing the Age of Consent Bill** for endangering the faith and its coercive treatment of Native Americans.
  - **In 1897, Bal Gangadhar Tilak's articles in Kesari were the subject of legal action**.
  - The **other well-known case included Mahatma Gandhi's 1922 sedition trial**. Sedition, according to Gandhi, is "the prince among the political sections of the IPC meant to destroy the freedom of the citizen."
  - **Post-Independence:**
    - **After independence, the term "sedition" was removed from the Constitution in 1948**, after debate in the Constituent Assembly.
    - **Jawaharlal Nehru proposed the first amendment to the Constitution in 1951, which limited freedom under Article 19 (1)** (a) and gave the state the authority to impose "reasonable restrictions" on the right to free expression.

- **Indira Gandhi's government made section 124A a criminal offense for the first time in Indian history.** The new Code of Criminal Procedure, 1973, which came into effect in 1974 and repealed the 1898 Colonial-Era Code of Criminal Procedure, **made sedition a knowable crime.**

- **Section 124 A**
  - **It states, "Whoever, words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts** to **bring into hatred or contempt** , or excites or attempts to excite disaffection towards the Government established by law in India s**hall be punished with imprisonment for life, to which fine may be added, , or with imprisonment** which may extend to three years, which fine may be added, or with fine."
  - In simple words, this means **anyone who attempts to create hatred, contempt, or disaffection towards the government can be punished** under the sedition law.
- **Punishment**:
  - Sedition is a **non-bailable offence**.
  - Punishment under the law **varies from imprisonment up to three years to a life term and fine.**
  - A person **charged under this law can't apply for a government job**. They have to **live without their passport** and must **present themselves in the court as and when required.**

Law Commission Says No Need To Reconsider Law On Adverse Possession; Disagrees With Supreme Court

Adverse Possession:

- It is a **legal concept** that a**llows a person who has unlawfully occupied someone else's land for a certain period of time to claim legal ownership** of that land.
- The claimant, or disseisor, **must demonstrate that several criteria** have been met before the court will allow their claim.
- **In India, adverse possession has been a part of the legal framework** for a long time and is rooted in the **idea that land must not be left vacant and instead be put to judicious use.**
- To claim adverse possession, the **occupier must prove that they have been in continuous, uninterrupted possession of the land for at least 12 years** and that their **possession was open, notorious, and hostile to the true**

owner.

- The law of Adverse Possession in India is **governed by the principle of The Limitation Law of 1963.**
- As per adverse possession under limitation act, **if over a due course of time or period, if an appeal is not made to revise any limitation, the current scenario of titles continues.**
- According to the Indian legal system, **if a property owner fails to make a claim towards their property for 12 years, and the same tenant continues to occupy the property for 12 years, the ownership rights to the property is transferred to the tenant.**

District Legal Services Authority West Tripura organizes Door

District Legal Services Authority

- It is formed **under Legal Services Authorities Act, 1987** to provide free legal aid and services to the weaker sections of this society to make sure that opportunities for securing justice are not denied to any citizen because of economic or other disabilities.
- It is a **statutory body** organized at the district level to provide effective monitoring of legal aid programmes and their composition.
- Legal Services Authorities are **statutory bodies** that are formed or constituted in the various states of India by the Legal Services Authorities Act, 1987.
- **Constitutional provision:**
    - **Article 39-A:**Deals with the provision of providing free legal services to the citizens of India.
    - The provision applies **to the citizens** if they are **unable to bear** the **expenditure** of legal services. It also helps the defendant in a case by appointing a lawyer to act for him in legal aspects.
- **Composition of DLSA**
    - It is a body that shall be **constituted by the State Government** in consultation with the Chief Justice of the High Court.
    - The act provides that a District Authority requires the **district judge as its chairman.**
    - It shall also consist of a number of other members who have the experience and qualifications as prescribed by the State Government.
    - The members possessing such requirements may be nominated by the Government in consultation with the Chief Justice of the High Court.
    - The person to be appointed shall belong to the **State Judicial Service not lowers than rank than that of a Subordinate Judge or Civil**

Judge posted at the seat of the District Judiciary as Secretary of the District Authority.

- The Assistant Commissioner of the concerned District acts as the Member Secretary of the District Authority.

- The officers and other employees of the **District Authority are entitled to salary** and allowances and shall also be subject to such other conditions of the services as the **State Government** in **consultation with the Chief Justice** of the High Court prescribes

Nyaya Vikas Portal created for monitoring the implementation of Centrally Sponsored Schemes

Nyaya Vikas Portal

- This portal helps in **empowering stakeholders with seamless access to information** about funding, documentation, project monitoring and approval.

Nyaya Vikas Scheme

- The **Department of Justice** has been implementing the Centrally Sponsored Scheme (CSS) for the Development of Infrastructure Facilities for Districts and Subordinate Judiciary since 1993-94.
- Under the Scheme, **central assistance is provided to the State Government** / UT Administrations for the **construction of court halls and residential units** for Judicial Officers / Judges of District and Subordinate Courts.
- The funds sharing pattern under the Scheme for **Centre and State is 60:40 in respect of States** other than North Eastern and Himalayan States.
- The fund's sharing pattern **is 90:10 in respect of North Eastern** and Himalayan States and 100% in respect of Union Territories.
- The portal has been created for monitoring the implementation of this Scheme.

Won't notify fact-checking unit till July 10: Centre to HC

- The Union government told the Bombay High Court that it would not notify the fact-checking unit (FCU) to be constituted under the new Information Technology (IT) Rules for identifying fake news against the government on social media until July 10.
- A Division Bench of Justices was hearing a petition challenging the constitutional validity of the IT (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2023.
- The new Rules require social media intermediaries to censor or otherwise modify content that relates to the Union government, if a government-mandated FCU directs them to do so.

Fact Check Unit

- The Fact Check Unit as proposed in the Information Technology Rules, 2021, is likely to have **four members — a representative from the IT Ministry** and **one from the Ministry of Statistics and Programme Implementation**, a "**media expert**" and a "**legal expert**".
- The unit will uphold the highest levels of professional and ethical standards to ensure trustworthiness and neutrality in the identification of potentially misleading or fake content
- The FCU is expected to require platforms to "prominently display" when they take content down on the basis of the unit's inputs, allow for an appeal process with a government committee, and maintain a public database of content it deems as misleading
- Further, the Ministry of Electronics and IT (MeitY) is also learnt to have finalised the broad-level processes that the FCU will follow, including granting it suo motu powers to identify potentially misleading content, corroborating evidence across various ministries and departments, and communicating its conclusion to social media platforms.
- Recently, MeitY notified amendments to the Information Technology Rules, 2021, creating a regulatory regime that will allow a fact check body it appoints to label content related to the government on online platforms as "fake" or "misleading".
- Content marked as such by the body will have to be taken down by online intermediaries if they wish to retain their 'safe harbour,' which is legal immunity they enjoy against third-party content.

Fake news vs online censorship

- The proposed Fact Check Unit will ask social media platforms to take down content which it sees as fake or misleading. Despite the government's assurance that the unit would work in a credible fashion, various stakeholders have serious misgivings and fear it would widen the scope of online censorship.
- The FCU is also expected to have a designated website of its own where it will publish the links to pieces of content that it has identified as fake or misleading.
- It is worth noting that under the rules, taking down such content has been specified as due diligence requirements that online intermediaries – social media platforms and internet service providers like Airtel, Jio and Vi – are expected to fulfil in order to preserve safe harbour protections afforded to them under Section 79 of the Information Technology Act, 2000.
- If they choose not to take down content flagged by the unit as fake, the government could take them to court.

CoWIN vaccination data out, govt. denies breach

- The Health Ministry issued a press release where it essentially ruled out CoWIN's APIs being used by the Telegram bot.
- As per reports, the data breach is possible if the mobile number of a person is entered — details such as the identification number of the document submitted (Aadhaar, passport, PAN and so forth), gender, date of birth, and the centre where the vaccine was administered, are provided as reply in an instant by the messenger bot in question.
- These details could be accessed even if the Aadhaar number was entered instead of the phone number. The passport numbers of those who had updated the CoWIN portal for travel abroad were also leaked.

The Ministry of Health press release first lays out the three ways in which data on CoWIN can be accessed:

1. a user can access their data on the portal through a one time password (OTP) sent to their mobile number,

2. a vaccinator can access data of a person, and the CoWIN system tracks and records each time an "authorised" user accesses the system, and

3. third party applications that have been provided authorised access of CoWIN APIs can access personal level data of vaccinated people after OTP authentication.

- Worrying is the fact that CoWIN, which serves the functions of registration, appointment scheduling, identity verification, vaccination, and certification of each vaccinated member, has also been integrated in the Aarogya Setu and UMANG Apps.
- **UMANG** (Unified Mobile Application for New-age Governance) is developed by the Ministry of Electronics and Information Technology (MeitY) and National e-Governance Division (NeGD) to drive mobile governance in India. UMANG provides a single platform for all Indian citizens to access pan India e-Gov services.
- Critics argue that the purpose for which CoWIN was created is over, and there is no need for the government to maintain this health data anymore. Ideally, under the Right to Privacy judgement, we should be allowed to demand data deletions.

UMANG

- The UMANG mobile app is a Government of India **all-in-one single, unified,**

secure, multi-channel, multi-lingual, multi-service mobile app.

- It provides **access to high impact services of various organizations** of Centre and States. Presently it has 2000+ services.
    - The aim of UMANG is **to fast-track mobile governance** in India.
- UMANG enables **'Ease of Living' for Citizens** by providing easy access to a plethora of Indian government services ranging from – Healthcare, Finance, Education, Housing, Energy, Agriculture, Transport to even Utility and Employment and Skills.
- The key partners of UMANG are **Employee Provident Fund Organization**, **Direct Benefit Transfer scheme** departments, **Employee State Insurance Corporation**, Ministries of Health, Education, Agriculture, Animal Husbandry and **Staff Selection Commission (SSC).**
- UMANG was **developed by the National e-Governance Division (NeGD),** Ministry of Electronics & IT.
    - It is a **'Digital India'** initiative.
- The **international version called 'UMANG International' was launched in 2020** to mark three years of UMANG.
    - The international version is **for select countries** that include USA, UK, Canada, Australia, UAE, Netherlands, Singapore, Australia and New Zealand.
    - It will help Indian international students, NRIs and Indian tourists abroad, to avail Government of India services, anytime.
    - It will also help in taking India to the world through 'Indian Culture' services available on UMANG and create interest amongst foreign tourists to visit India.
- UMANG **attained 'Best m-Government service' award** at the 6 World Government Summit held at Dubai, UAE in February 2018.

Right to life includes the right not to be tied down by casteism, says HC

- The High Court has directed the CBSE to comply with the request of two brothers belonging to the Scheduled Caste community to update their father's surname in their Class 10 and 12 certificates. In a plea before the court, the siblings said their father had decided to change his surname from 'Mochi' to 'Nayak' due to caste atrocities suffered by him.
- While the petitioners were successful in getting their father's name changed on his Aadhaar and PAN cards, the CBSE had denied their request for the name change. "The right to life includes the right to live with dignity, which includes [the right] not to be tied down by casteism,"

Look for ways to adopt AI into audit techniques for effectiveness: CAG

Supreme Audit Institutions (SAIs)

- They **are public oversight institutions which audit a government's use of public funds**.
- They are a **critical link in a country's accountability chain.**
- By **scrutinizing public financial management and reporting** they provide assurance that resources are used as prescribed.
- Most SAIs **derives their mandate from the constitution and/or legislation**.
- SAIs **undertakes financial audits of organizations' accounting procedures and financial statements, and compliance audits** reviewing the legality of transactions made by the audited body.
- They **also conduct performance audits** to scrutinize the efficiency, effectiveness or economy of government's undertakings.
- The **Comptroller and Auditor General (CAG) of India is India's SAI.**

INTOSAI – International Organization of Supreme Audit Institutions:

- It is an **autonomous, independent and non-political organization.**
- It operates as an **umbrella organization for the external government audit community.**
- It has **special consultative status with the Economic and Social Council (ECOSOC)** of the United Nations.
- It works to **promote auditing standards, good governance of SAIs**, and **SAI independence,** among other work.
- **Structure**:
    - The **International Congresses of Supreme Audit Institutions (INCOSAI**) is the **supreme organ of INTOSAI** and is composed of all the members. On **a triennial basis, it holds regular meetings,** which is chaired by the hosting SAI.
    - The **INTOSAI Governing Board meets annually to provide strategic leadership**, stewardship, and continuity of INTOSAI activities between INCOSAI.
    - The **CAG of India is a member of the Governing Board of the INTOSAI**.

T.N. withdraws general consent granted to CBI

- The Government in Tamil Nadu announced that it has withdrawn the general consent given to the Central Bureau of Investigation (CBI), under Section 6 of the Delhi Special Police Establishment (DSPE) Act, allowing the agency to

investigate cases without its permission in the State. The move came on the day when Tamil Nadu Electricity Minister was arrested by another central agency, the Enforcement Directorate (ED).

- The CBI should henceforth seek prior permission from the Tamil Nadu government for undertaking investigation
- Several States including Mizoram, West Bengal, Chhattisgarh, Rajasthan, Kerala, Jharkhand, Punjab and Meghalaya — had withdrawn their general consent given to CBI.
- As per Section 6 of the DSPE Act, 1946, the CBI needs consent from the respective State governments for conducting investigation in their jurisdiction. A general consent to CBI granted by State governments enables the central agency to carry out investigations without such hindrances.
- Many offices of the CBI, including that of the Joint Director and Head of Chennai Zone, Anti-Corruption Bureau, Special Crime Branch, Economic Offences Branch, Special Unit, and Scientific Aid Unit are located in Chennai and Madurai of Tamil Nadu.
- While Mizoram withdrew its general consent in July 2015, West Bengal did it in November 2018 and Chhattisgarh in January 2019.

Consent Given by State Government

- **Legal and Constitutional Basis:** According to **Section 6** of the **Delhi Special Police Establishment Act of 1946** under which the CBI functions, the State's consent is required to extend CBI investigation beyond Union Territories.
    - The legal foundation of the CBI has been construed to be based on **Entry 80** of the **Union List** which provides for the extension of powers of the police force belonging to one State to any area in another State but not without its permission.
    - "Police" is Entry 2 in the **State List** under the **Seventh Schedule** of the Constitution.
- **Types of Consent:**
    - There are **two types of consent** for a probe by the CBI.
        - **General Consent:** When a state gives a general consent (Section 6 of the Delhi Special Police Establishment Act) to the CBI for probing a case, **the agency is not required to seek fresh permission every time** it enters that state in connection with investigation or for every case.
            - A general consent is given to facilitate that seamless investigation in a case of corruption or violence.
        - **Specific Consent:** When a general consent is withdrawn, CBI

needs to seek case-wise consent for investigation from the concerned state government.

- If specific consent is not granted, the CBI officials will not have the power of police personnel when they enter that state.
- This hurdle impedes seamless investigation by the CBI.

- **SC Judgement:**
  - In the ***Advance Insurance Co. Ltd case, 1970***, a Constitution Bench held that the definition of "State", as contained in **The General Clauses Act,** includes Union Territories as well.
  - Hence the CBI, being a force constituted for Union Territories as recognised under the Delhi Special Police Establishment Act of 1946, **can conduct investigation into the territories of the States only with their consent.**
- **Impact on Pending Investigation:**
  - The withdrawal of general consent does not affect pending investigation **(Kazi Lendhup Dorji v. CBI, 1994)** or the cases registered in another State in relation to which investigation leads into the territory of the State which has withdrawn general consent, **nor does the withdrawal circumscribe the power of the jurisdictional High Court to order a CBI investigation.**

IPS officer Ravi Sinha selected as new chief of RAW

Research and Analysis Wing (R&AW)

- It was established in 1968 to handle **the India's international intelligence affairs.**
- It came into force after the China-India War in 1962.
- At present, the intelligence arm operates **under the aegis of the Prime Minister's Office.**
- **Working mechanism**: It collects military, economic, scientific, and political intelligence through covert and overt operations.
- The agency is also charged with monitoring terrorist elements and smuggling rings that transport weapons and ammunition into India.

Genesis of RAW

- Until 1968, the **Intelligence Bureau** (IB) was responsible for India's internal intelligence and also handled external intelligence.
- However, after the 1962 China-India war and the Indo-Pakistani war in 1965, India established a separate and distinct external intelligence organization –

the Research and Analysis Wing.

- In 1968, then India's Prime Minister Indira Gandhi appointed R. N. Kao as the first director of RAW.

Average disposal time of public grievances by central govt depts reduced to 16 days

Grievance Redressal Assessment and Index (GRAI) 2022

- It was conceptualised and designed by **the Department of Administrative Reforms and Public Grievances (DARPG)**, Govt. of India.
- **Objective:** To present an organisation-wise comparative picture and provide valuable insights about strengths and areas of improvement regarding the grievance redressal mechanism.
- Eighty-nine Central Ministries and Departments were assessed and ranked based on a comprehensive index in the dimensions of (1) Efficiency, (2) Feedback, (3) Domain and (4) Organisational Commitment and corresponding 12 indicators.
- To compute the index, data between January and December 2022 was used from the **Centralised Public Grievance Redressal and Management System (CPGRAMS).**

CPGRAMS

- It is an online platform available to the **citizens 24x7 to lodge their grievances** to the public authorities on any subject related to service delivery.
- It is a single **portal connected** to all the **Ministries/Departments** of the Government of India and States.
- Every Ministry and State have role-based access to this system.
- It is also accessible to the citizens through a standalone mobile application.

Parshottam Rupala launched NANDI Portal

- It is developed by the **Department of Animal Husbandry and Dairying** (DAHD) in collaboration with the **Central Drugs Standard Control Organization** (CDSCO) through the Centre for Development of Advanced Computing (CDAC).
- *Significance*
    - It will streamline **the regulatory approval process** for veterinary products.
    - It will enhance transparency and efficiency in assessing and examining proposals for veterinary drugs and vaccines.
    - It will be more streamlined through seamless integration with the **SUGAM portal** of the Central Drugs Standard Control Organization.

- It will promote the well-being of livestock and the livestock industry.
- It will bring about growth and innovation by enabling **quick and easy coordination** between various Government departments and institutes.

Central Drugs Standard Control Organization

- It is the **National Regulatory Authority** (NRA) of India for the medical devices industry under the provisions of the Drugs & Cosmetics Rules.
- It works under the **Ministry of Health & Family Welfare.**
- Drugs Controller General of India (DCGI) is the head of the CDSCO.
- **Headquarters:** New Delhi.
- Under the Drugs and Cosmetics Act, CDSCO is responsible for,
  - Approval of New Drugs;
  - Conduct Clinical Trials;
  - Laying down the standards for Drugs;
  - Control over the quality of imported Drugs in the country;

EPFO extends deadline to apply for higher pension till July 11

Employees' Provident Fund Organisation (EPFO)

- It is a **statutory body**that came into existence under **the Employees' Provident Fund and Miscellaneous Provisions Act, of 1952.**
- The Act and Schemes framed there under are administered by a **tripartite Board** known as the Central Board of Trustees, Employees' Provident Fund, consisting of representatives of **Government (Both Central and State), Employers, and Employees.**
- The Board administers a contributory provident fund, a pension scheme, and an insurance scheme for the workforce engaged in the organized sector in India.
- It is one of the world's largest organizations in terms of clientele and the volume of financial transactions undertaken by it.
- The Board is assisted by the Employees' PF Organization (EPFO), consisting of offices at 122 locations across the country.
- The EPFO is under the administrative control of the **Ministry of Labour and Employment, Government of India.**
- The Board operates three schemes, namely:
  - The Employees' **Provident Funds Scheme 1952 (EPF) and its features**
    - Accumulation plus interest upon retirement and death.
    - Partial withdrawals allowed for education, marriage, illness, and house construction.
    - Housing scheme for EPFO members to achieve the Prime

Minister's vision of Housing for all by 2022.

- The Employees' **Pension Scheme 1995 (EPS) and its features**
  - The monthly benefit for superannuation/benefit, disability, survivor, widow(er), and children.
  - Minimum pension of disablement.
  - Past service benefit to participants of the erstwhile Family Pension Scheme, 1971.

- The **Employees' Deposit Linked Insurance Scheme 1976** (EDLI)
  - The benefit is provided in **case of the death of** an employee who was a member of the scheme at the time of death.
  - The benefit amount is 20 times the wages, a maximum benefit of 6 Lakh

Regulatory body tells OTT platform to take down content

Digital Publisher Content Grievances Council (DPCGC)

- It is an **independent self-regulatory body for Online Curated Content (OCC) providers**.
- It was **set up under the aegis of Internet and Mobile Association of India** (IAMAI).
- DPCGC has been **recognised and registered by the Ministry of Information** & Broadcasting **as Level II Self-Regulatory Body for publishers of OCC providers**, under Information Technology (ntermediary Guidelines and Digital Media Ethics Code) Rules, 2021.
- The DPCGC **has an Online Curated Content Publishers (OCCP) Council** composed of publishers of OCC as members **and an independent Grievance Redressal Board [GRB] consisting of a chairperson and six members.**
- The **GRB will be chaired by a retired Supreme Court/High Court judge**, and the **members will comprise eminent persons from the media** and entertainment industry and experts from various fields, including child rights, minority rights, and media law.
- **Functions of GRB:**
  - It will **oversee and ensure the alignment and adherence to the Code of Ethics by the OCCP Council members.**
  - **Provide guidance to entities** on the Code of Ethics.
  - **Address grievances that have not been resolved** by the publisher within 15 days.
  - **Hear grievances/appeals** filed by complainants.
- DPCGC, through the GRB aims to usher in a redressal mechanism which will

ensure a balance between addressing viewer complaints and showcasing content in free-speech environment without ad-hoc interventions

Online Curated Content (OCC) Platforms

- OCC Platforms are **companies that carry on the business** which curates and **presents a wide variety of content by means of online video-on-demand platforms**.
- **Amazon Prime, Netflix, Hotstar, Zee5, etc, are examples** of OOC Platforms operating in India.
- These platforms **operate on the basis of a "pull model"**, whereby customers have the choice of viewing content as per their own convenience.

Rajya Sabha polls in 3 states on July 24

- India follows the British parliamentary system, so the Rajya Sabha, or the Upper House of Parliament, is **equivalent to the House of Lords in the United Kingdom.**
- **Present strength**: The Rajya Sabha currently **has 245 members**, including **233 elected members and 12 nominated**. As **per the constitutional** limit, the Upper House strength **cannot exceed 250.**
- **Membership**: While **233 members are elected from states and Union Territories** (UTs), the **President of India nominates the remaining 12** from the fields of art, literature, science and social services.
- **Tenure**: Every Rajya Sabha MP has a **tenure of six years,** and **elections to one-third of seats are held every two years.**
- **Vacancy**: According to Section 154 of the Representation of the People Act 1951, a **member chosen to fill a casual vacancy will serve for the remainder** of his predecessor's term of office.
- **Chair**: The **Indian vice-president is the chairperson of the Upper House**, which also has a deputy chair.

Rajya Sabha

- While Lok Sabha members are elected directly by the voters, Rajya Sabha members **are elected indirectly by the people**, that is, **by the elected Members of a state's Legislative Assembly (MLAs).**
- How many Rajya Sabha **members a state can send depends on its population.**
- MLAs vote in the Rajya Sabha elections in what is called **proportional representation with the single transferable vote (STV) system**. **Each MLA's vote is counted only once**.
- In this system, **MLAs don't vote for each seat.**

- Instead, the MLAs are **given a paper with the names of all candidates**. **They have to give their order of preference for each candidate,** marking 1,2,3… against their names.
- The **ballot is open, but MLAs have to show their ballots to an authorised agent from their party** to prevent practices such as cross-voting. A vote cannot be counted if the ballot is not shown to the agent. **Independent MLAs cannot show** their ballot to anyone.
- **If a qualifying number of voters choose a candidate as their first choice, he or she is elected.**
- The **remaining votes go to the next candidates but with a lesser value**. So, MLAs also vote for candidates from other parties.
- The **candidate that gets rank 1 from an MLA secures a first preference vote. In order to win, a candidate needs a specific number of such first-preference votes**. This number **depends on the strength of the state Assembly and the number of MPs it sends to Rajya Sabha.**
- **To win, a candidate should get a required number of votes which is known as a quota** or preference vote. **The formula is = [Total number of votes/(Number of Rajya Sabha seats + 1)] + 1.**
- However, the formula is **changed in case more than one seat needs to be filled**. The total number of votes required for a candidate in the case is = [(Number of votes x 100) / (Vacancies + 1)] + 1.

Ensure the return of displaced people, says Meghalaya tribal body

Autonomous District Councils (ADC)

- The **Sixth Schedule provides a list of ten tribal areas** in **Assam** (3), **Meghalaya** (3), **Tripura** (1) and **Mizoram** (3).
- Each of **these tribal areas constitutes an autonomous district**. **Each autonomous district has an Autonomous District Council** (ADC).
- **Membership**: **ADCs have up to 30 members with a term of five years**, of whom **four are nominated by the governor** and the **remaining 26 are elected on the basis of adult franchise.**
- **Tenure**: The term of the District Councils is for **five years from the date of their constitution**.
- **Functions**: The functions of ADCs as defined in schedule 6 of the constitution included –
    - **making laws on land**,
    - **management of forests,** except reserved forests,
    - **appointment of traditional chiefs** and headmen,

- **making rules regulating the inheritance of property, marriage**, divorce, the constitution of village courts,
- It can **establish, construct or manage primary schools, dispensaries, markets**, ferries, fisheries, roads and so on in the district.
- **It can also make regulations for the control of money lending and trading by non-tribals.** But such regulations **require the assent of the governor**.

- **Revenue source:** The main Revenue Sources of ADCs, as specified in the Sixth Schedule, were:
  - **taxes on professions, trades, callings** and employment;
  - **taxes on animals, vehicles** and boats;
  - **taxes on the entry of goods into a market** and sale therein, and tolls on passenger and goods carried on ferries; and
  - **taxes for the maintenance of schools**, dispensaries or roads.

Tribal safety concerns lead to many 'zero FIRs' in Manipur

Zero FIR

- It refers to an FIR that is registered **irrespective of the area** where the **offence is committed.**
- The police, in such a case, can no longer claim that they have no jurisdiction.
- Such an FIR is then later transferred to the police station that has the actual jurisdiction so that the investigation can begin.
- It was introduced on the **recommendation of the Justice Verma Committee** formed at the backdrop of the brutal Nirbhaya gang rape in Delhi in 2012.
- This puts a legal obligation on the police to begin an investigation and take quick action without the excuse of the absence of jurisdiction.

First information report (FIR)

- It is the **information given** to a police officer in writing as per the provisions of **Section 154 of the Code of Criminal Procedure (CrPC).**
- From the point of view of an informant, the main purpose of an FIR is to set criminal law into motion.
- While for the police, the main purpose of an FIR is to obtain information about alleged criminal activity and take necessary steps to produce the perpetrator(s) before a court.

Objectives

- To **avoid delay** and any other kind of disruptions.
- To make police bound to take the jurisdiction.

- **Timely jurisdiction** is to be taken immediately after the registration of the FIR.
- To make sure that the investigation is done properly.
- To enable the case to proceed fast.

Reservation for transgender community: What the demand for 'horizontal' reservation is

In response to a clarification requested by the Bombay High Court, the Maharashtra government said on June 13 that it will be difficult to provide "additional reservations" to transgender persons in education and public employment, given the reservation that exists so far for various communities in India.

What have the courts said on reservation for the transgender community?

- In the *National Legal Services Authority of India (NALSA) v Union of India (2014)* case, the Supreme Court ruled that transgender persons have a right to reservation, owing to the fact that they "**are a socially and educationally backward class**".
- The *NALSA* judgment entitles trans persons to reservations on constitutional grounds. It does not, however, mention the nature of reservations – whether they are to be vertical or horizontal.

What are horizontal reservations?

- In India, historically oppressed and disadvantaged communities have a right to affirmative action policies. Reservation in education and employment can be divided into two broad categories, namely, vertical and horizontal.
- Vertical reservations are provisions aimed at addressing social asymmetry arising out of caste hierarchy, and in the case of OBCs, social and educational "**backwardness**". These include reservations for Scheduled Castes (SC), Scheduled Tribes (ST) and Other Backward Classes (OBC).
- Horizontal reservation, on the other hand, cuts across all vertical groups to provide affirmative policies for disadvantaged groups within categories. For example, disabled persons are guaranteed horizontal reservation in all the aforementioned vertical categories, general and reserved (vertical) alike, by the Central government.
- States like Uttarakhand and Bihar have also rolled out policies that guarantee horizontal reservation for women. This means that a woman who belongs to the SC category should be able to avail reservation based on both caste and gender. The horizontal model ensures this. This is exactly what transgender persons are fighting for, as well.

What has happened so far on horizontal reservations?

- In 2015, the Tamil Nadu government decided to categorise "transgender or

eunuch (thirunangai or aravani)", that is, only transwomen under the Most Backward Classes (MBC) category. After *Sangama v State of Karnataka*, Karnataka became the first and only state to offer one per cent horizontal reservation to transgender persons in 2021. In April this year, transgender persons were included in the OBC category in Madhya Pradesh.

ECONOMY

Market access critical for India's sustainable agri transition: CSE report

Our policymakers have been talking about growing food through organic and natural farming. But unless farmers get assured access to market to sell their produce at a remunerative price, the challenge of transition will remain difficult to overcome

Lack of market access may become a barrier in India's journey towards non-chemical farming practices.

What are the issues in agricultural marketing?

- **Indian farmers today can their sell their produce at:**
  - Farmgate or local market (haat) to village aggregators;
  - APMC (agricultural produce market committee) wholesale mandi to private traders
  - To government at the minimum support price (MSP)
- **MSP**
  - Announced for 23 crops but given for only 3 crops.
  - MSP is given only on produce meeting "fair average quality" norms
  - Government procurement facilities are not available throughout the country.
  - Also, next phase to growth in agricultural income will come from high yield commodities like dairy products, vegetables, fruits etc. but the government still providing MSP in cereals
- **APMC**
  - APMCs technically have multiple buyers, but the system of open auctions for determining prices through transparent bidding is, in practice, non-existent.
  - In most APMCs, buyers have to route all purchases through licenced aadhatiyas(middlemen).
    - These middlemen charge a commission for their "services" — many times, both from the buyer and seller.
    - The aadhatiya is also often a moneylender, supplying seeds, fertilisers and pesticides to farmers on credit. They, then, are forced to sell through him and settle their dues in perpetuity.
  - Also, mandi fees ranges from 0.5% to 5% on the value of the sale, while varying across states and commodities
  - Further mandi fees on inter-state trade amount to double taxation, besides violating the idea of a single national market.
  - **Distress sale** due to lack of storage infrastructure

        - At mandis the lowest prices are during the 3-4 post-harvest months and highest in the immediate pre-harvest period.
        - Farmers undertake maximum sales just after harvest, as they need to purchase inputs for the next sowing season.
    - To rectify this APMC issue:
        - The Union Agriculture Ministry has formulated the Model Agricultural Produce and Livestock Marketing (APLM) Act
        - The Act seeks to expand farmers' marketing choices — by allowing private markets (as against only APMCs), permitting direct bulk purchases from the farm gate, declaring warehouses or cold storages as deemed markets, and demolishing the existing concept of a **"market area"**
        - But APLM act is witnessing opposition, primarily due to the delineation of "market area", which has a bearing on the earnings of APMCs.
- **Price volatility**
    - The root cause of price volatility is the uncontrolled cycles of excesses and shortages.
    - Price projections in a particular commodity are often made based on previous years' trends that may not hold true, leading to excess or low plantings.

What is Market Area as per APMC?

- Currently, an APMC's purview extends to the entire tehsil and villages in that sub-district, with any trade undertaken in this so-called market area being liable for payment of mandi fee.
- The Model APLM Act recognises only the market yard, i.e the area within the boundary walls where actual trade in the mandi takes place

Cabinet nod for second phase of CITIIS programme

- The Union government on Wednesday approved the second phase of the City Investments to Innovate, Integrate and Sustain (**CITIIS**) project, a programme under the ambit of the Smart Cities Mission, which aims to promote integrated waste management and climate-oriented reform actions.
- The CITIIS 2.0 will be implemented in 18 cities which would be selected based on a competition.
- The programme, which was approved at a meeting of the Union Cabinet chaired by Prime Minister, aims to support competitively selected projects promoting circular economy with a focus on integrated waste management at the city level,

climate-oriented reform actions at the State level, and institutional strengthening and knowledge dissemination at the national level.

- It would span over a period of four years from 2023-2027 and has been conceived and would be implemented in partnership with the French Development Agency (AFD), Kreditanstalt für Wiederaufbau (KfW), the European Union (EU), and National Institute of Urban Affairs (NIUA).
- The funding for CITIIS 2.0 would include a loan of ₹1,760 crore from AFD and KfW, split equally, and a technical assistance grant of ₹106 crore from the European Union.
- The CITIIS 2.0 has three major components which are financial and technical support for developing projects focused on building climate resilience, adaptation and mitigation in up to 18 smart cities, and interventions at centre, State and city levels to further climate governance.

Strategic disinvestment push: Buyers of PSU shares exempt from gift tax

Gift Tax:

- The Parliament of India introduced the **Gift Tax Act in 1958,** and gift tax is essentially the tax charged on the receipt of gifts.
- The Income Tax Act states that gifts **whose value exceeds Rs.50,000** are subject to gift tax in the hands of the recipient.
- The gift tax is also applicable on certain transfers that are not considered a gift.
- The transfer of existing movable or immovable property in money or money's worth qualifies for gift tax.
- The gift is exempted from tax if **it was given by a relative.**
- The income tax rule Parent, Spouse, Siblings, Spouse's siblings, Lineal descendants Lineal descendants of the spouse can be considered as a relative
- There are several other situations where gifts can be exempted from tax. Listed below are other situations in which the gift will be exempted from tax.
    - **Gifts received during weddings** are usually exempted from tax.
    - Gifts received **as part of the inheritance** are exempted from tax.
    - Cash or **rewards received by local authorities** or educational institutions based on merit is exempted from tax.

WTO flags poor utilisation of India scheme for least developed countries

Duty-free quota-free (DFQF) scheme:

- **What it is?** The decision to provide duty-free quota-free (DFQF) access for LDCs was first taken at the WTO Hong Kong Ministerial Meeting in 2005.
- **India** became **the first developing country** to extend this facility to LDCs in

2008, providing market access to 85 per cent of India's total tariff lines

- The scheme was expanded in 2014 providing preferential market access on about 98.2 per cent of India's tariff lines to LDCs.

World Trade Organisation (WTO)

- It was set up on 1st January 1995 and was born out of the 1986-94 Uruguay Round of Negotiations.
- It is the only global international organization dealing with the rules of trade between nations.
- It is the successor to the **General Agreement on Tariffs and Trade** (GATT)
- The main function of the WTO is to ensure that trade flows as smoothly, predictably and freely as possible.
- It further consists of two principles, **the Most-favoured Nation** (MFN) principle and the **National treatment principle.**
- It is a 'member-driven' organisation, with decisions taken by consensus among the member governments.
- Special and differential treatment to LDCs and developing countries in the form of special flexibilities and rights are specified in various WTO agreements and decisions.

P2P Lending Under Scanner As RBI Quizzes Startups

Peer-to-Peer (P2P) lending

- It is done **through a website** that connects borrowers and lenders directly.
- Those who want to lend money, open an account with a P2P platform as a lender. And those who require a loan register themselves as a borrower.
- It enables individuals to **obtain loans directly from other individuals**, cutting out the financial institution as the middleman.
- In 2017, the Reserve Bank of India brought this service under its regulatory purview.
- Only an **NBFC can register as a P2P lender** with the permission of RBI. Every P2P lender should obtain a certificate of registration from the RBI.
- The minimum capital requirement to set up a P2P platform is fixed at Rs. **2 Crores.**

In order to boost domestic production, Government removes ceiling for procurement of Tur, Urad and Masur under Price Support Scheme (PSS) for 2023-24; Farmers free to sell any amount of their produce of Tur, Urad and Masur under PSS this year

Price Support Scheme

- It is being **implemented by the Government** of India in the state.
- It is one of the components **of the Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (AASA) scheme.**
- **Implemented by:** The **Department of Agriculture & Cooperation** implements this scheme for procurement of oil seeds, pulses and cotton, through NAFED which is the Central nodal agency, at the MSP declared by the government.
- **Main crops covered**: Bajra, Jowar, Maize, Paddy, Cotton, Tur, Moong, Urad, Groundnut, Sesamum Wheat, Gram, Mustard, Sugarcane etc.

Benefits

- Farmers get the benefit of the scheme through the **sale of their produce at support price in APMC** centres opened by the Nodal procurement agency.
- When prices of commodities fall below the MSP, State and central notified procurement nodal agencies purchase commodities directly from the farmers at MSP, Under specified FAQ (fair Average Quality).
- In this way, prices of the main commodities are procured and protect the farmers against economic loss in farming.

Govt To Allow 2000 Primary Agricultural Credit Societies To Open Jan Aushadhi Kendras

Pradhan Mantri Bhartiya Jan Aushadhi Kendras

- These are set up under **Pradhan Mantri Bhartiya Janaushadhi Pariyojana**, which was launched by the Department of Pharmaceuticals, **Ministry of Chemicals and Fertilizers** in November 2008.
- **Objective:** To provide quality medicines at affordable prices for all, particularly the poor, to reduce out-of-pocket expenses in healthcare.
- These Jan Aushadhi Kendras **provide generic drugs,** which are available at lesser prices but are equivalent in quality and efficacy to expensive branded drugs.
- Jan Aushadhi stores also sell allied medical products commonly sold in chemist shops to improve the viability of running the Jan Aushadhi store.
- **Pharmaceutical & Medical Devices Bureau of India** (PMBI) has been established under the Department of Pharmaceuticals, Govt. of India, with the support of all the CPSUs for co-coordinating procurement, supply, and marketing of generic drugs through the PMBKs.
- The incentive **amount of Rs.5 lakh** will be provided to set up Pradhan Mantri Bhartiya Jan Aushadhi Kendra.

Jan Aushadhi Kendra

- State Governments or any organization / **reputed NGOs**/ Trusts / Private

hospitals / charitable institutions / Doctors / Unemployed pharmacists/ individual entrepreneurs are eligible to apply for the new Jan Aushadhi Kendra.

- The applicants shall have to employ one B Pharma / D Pharma degree holder as Pharmacist in their proposed store.

SAT Grants Relief for Brickwork Ratings

Securities appellate tribunal

- It is a statutory body established under the provisions of **the Securities and Exchange Board of India Act, 1992.**
- It **hears and disposes** of appeals against orders passed by the Securities and Exchange Board of India, the **Pension Fund Regulatory and Development Authority (PFRDA**) and the **Insurance Regulatory Development Authority of India** (IRDAI).
- **Composition:**
    - It consists of a **Presiding Officer & Two other members.**
    - The Presiding officer shall be appointed by the Central Government in consultation with **the Chief Justice of India or his nominee**.
- It has the **same powers as vested in a civil court** under the code of civil procedure while trying a suit.

SEBI

- It is a **statutory regulatory body** established by the Government of India in 1992.
- It was given statutory powers through **the SEBI Act, of 1992.**
- **Objective:** To regulate the securities market in India and protect the interests of investors in securities.

'Extending deposit insurance cover to bank PPI needs examination'

Prepaid Payment Instruments

- These are instruments that **facilitate the purchase of goods and services**, conduct of financial services and enable remittance facilities, among others, against the money stored in them. PPIs can be issued as cards or wallets.
- There are two types of PPIs **– small PPIs and full-KYC** (know your customer) PPIs.
- Further, small PPIs are categorized as – PPIs up to Rs 10,000 (with cash loading facility) and PPIs up to Rs 10,000 (with no cash loading facility).
- PPIs can be **loaded/reloaded by cash, debit to a bank account**, or credit and debit cards.
- The cash loading of PPIs is **limited to Rs 50,000 per month subject** to the

overall limit of the PPI.

PPI instruments

- PPIs can be **issued by banks and non-banks** after obtaining approval from the RBI.
- Some of the approved PPI issuing banks are; Airtel Payments Bank, Axis Bank, Bank of Baroda, Jio Payments Bank, Kotak Mahindra Bank etc.

Deposit Insurance and Credit Guarantee Corporation

- It is a **statutory body** established under the Deposit Insurance and Credit Guarantee Corporation Act, of 1961.
- It is a **wholly-owned subsidiary** of the **Reserve Bank of India** (RBI).
- It provides deposit insurance that works as a **protection cover for bank deposit** holders when the bank fails to pay its depositors.
- The agency insures all kinds of deposit accounts of a bank, such as savings, current, recurring, and fixed deposits **up to a limit of Rs. 5 lakh per account holder** per bank.
- In case an individual's deposit amount exceeds Rs.5 lakh in a single bank, only Rs.5 lakh, including the principal and interest, will be paid by DICGC if the bank becomes bankrupt.

What DICGC Does Not Cover?

- Deposits of **state or Central governments**, **foreign governments**, Inter-bank deposits, and state land development banks depositing with the state cooperative bank.
- Funds that are due on account of India and deposits received outside India and funds exempted by the corporation with the previous approval from RBI.

Govt. hikes kharif MSP; farmers demand more

The Centre has set the minimum support price (MSP) for paddy sown in the kharif or monsoon season at ₹2,183 per quintal, an increase of ₹143 a quintal from last year's figure.

The 2023-24 MSPs for 17 kharif crops and variants were approved at a meeting of the Cabinet Committee on Economic Affairs (CCEA), chaired by Prime minister.

Crop shortages could exacerbate inflation following MSP increases

- The inflationary impact of the 5%-11% increase in the minimum support price (MSP) for farm produce will be an additional factor for the RBI's Monetary Policy Committee (MPC) to consider at its bimonthly policy review to be announced.
- The spillover effects on consumer food prices from higher assured remuneration to farmers would hinge on the government's procurement strategy and prevailing market prices, but any output shortages could lead to

higher prices, economists cautioned.

- The 7% increase in paddy MSP could lead to higher prices if the crop did not exceed last year's output.

Inflation in rice

- Procurement takes place for rice, whose inflation is already high at 11%. So an increase of 7% will add to benchmark prices... Similarly, jowar, bajra and maize are all running inflation of 13-15% and hence, also run a risk of higher prices in case of crop failure
- " The crux will hence be the size of the crops this season," he said, stressing that food prices were the major risk to inflation so the Reserve Bank of India would be cautious until there was more clarity on kharif crop prospects.

RBI gives green signal to first loss default guarantee (FLDG) framework; here's how will fintech, banks, NBFCs benefit

First Loss Default Guarantee (FLDG):

- **What is it?** FLDG is a **lending model between fintech firms and their partner banks and non-banking finance companies** where the i**nitial hit on a default is taken by the fintech firm** that originated the loan.
- Under these agreements, the **fintech originates a loan and promises to compensate the partners up to a pre-decided percentage** in case customers fail to repay.
- The **bank/NBFC partners lend through the fintech but from their books**.
- **Advantages**:
    - FLDG **helps expand the customer base of traditional lenders** but relies on the fintech's underwriting capabilities.
    - It will **also rationalise the existing prudential norms to implement resolution plans in respect of exposures affected by natural calamities**.

FinTech

- Fintech, a combination of the terms "financial" and "technology," is the **application of new technological advancements to products and services in the financial industry**.
- It refers to the **application of software and hardware to financial services and processes**, making them faster, easier to use and more secure.
- The fintech industry **includes everything from payment processing solutions to mobile banking apps.**
- **Some examples include mobile banking, peer-to-peer payment services**, automated portfolio managers or trading platforms.

RBI permits banks to issue RuPay prepaid forex cards

RuPay card

- It is an Indian domestic card scheme conceived and **launched by the National Payments Corporation of India (NPCI).**
- Its mission is to fulfil the Reserve Bank of India's vision of having a domestic, open-loop and multilateral system of payments in India.
- It works to enable electronic payment at all Indian banks and financial institutions.
- **Benefits of RuPay Card**
    - **Lower cost and affordability:** Since the transaction processing will happen domestically, it would lead to a lower cost of clearing and settlement for each transaction. This will make the transaction cost affordable and will drive the usage of cards in the industry.
    - **Customized product offering:** RuPay, being a domestic scheme is committed towards the development of customized product and service offerings for Indian consumers.
    - **Protection of information related to Indian consumers**: Transaction and customer data related to RuPay card transactions will reside in India.

NPCI

- It is an umbrella organisation launched in 2008 by the Reserve Bank of India (RBI) and the Indian Banks' Association (IBA) under the provisions of **the Payment and Settlement Systems Act, 2007.**
- It is owned by a consortium of banks, is aimed at creating robust payments and settlement systems.

Irrigation scheme unravels in Jharkhand: Aadhaar misused, funds claimed, farmers clueless

Pradhan Mantri Krishi Sinchayee Yojana

- It was launched in 2015 to improve farm productivity and ensure better utilization of the resources in the country.
- **Objectives**
    - Convergence of investment in irrigation at the field level
    - Expand cultivable area under irrigation
    - Improve On-farm water use efficiency to reduce the wastage of water
    - Enhance the adoption of being precise in irrigation and other water-saving technologies (more crop per drop)

- It consists of two major components namely,
    - Accelerated Irrigation Benefit Programme (AIBP)
    - **Har Khet Ko Pani (HKKP):** It consists of four sub-components, being Command Area Development & Water Management (CAD&WM), Surface Minor Irrigation (SMI), Repair, Renovation and Restoration (RRR) of Water Bodies, and Ground Water (GW) Development component.
- In addition, PMKSY also consists of two components
    - **Per Drop More Crop** (PDMC) component is being implemented by the Department of Agriculture and Farmers Welfare.
    - **The Watershed Development component** (WDC) is being implemented by the Department of Land Resources

Punjab aims to bring 5 lakh acres under DSR method this paddy sowing season

Direct Seeded Rice (DSR) method

- DSR, also called the '**broadcasting seed technique'**, is a **water-saving method of sowing paddy.**
- **Seeds are directly drilled into the fields** in this method.
- This **saves groundwater**, **as opposed to the traditional** water-intensive method, under **which rice seedlings are transplanted from a nursery to waterlogged fields**.
- With DSR technique, **farmers must sow paddy only after pre-sowing (rauni) irrigation and not in dry fields.** Further, the **field should be laser levelled**.
- **Advantages**:
    - **No significant reduction of yield** under optimal conditions;
    - **Savings on irrigation water by 12-35%** under efficient water management practices;
    - **Reduces labour and drudgery** by eliminating seedling uprooting and transplanting;
    - **Reduces cultivation time, energy**, **and cost;**
    - **No plant stress** from transplanting;
    - **Faster maturation** of crops;
    - **Lower GHG emissions**;
    - Mechanised DSR **provides employment opportunities**;
    - **Increases total income** by reducing the cost of cultivation;
- **Current Constraints:**
    - **Higher seed rates;**
    - **Seeds exposed to birds and pests**;

- **Weed management;**
- Higher **risk of lodging;**
- **Risk of poor or non-uniform crop establishment**;

IBBI proposes mandatory audit of insolvency resolution process costs

Insolvency and Bankruptcy Board of India (IBBI)

- It was **established on 1st October 2016 under the Insolvency and Bankruptcy Code (IBC),** 2016.
- It is **responsible for the implementation of the IBC**. The IBC **amends and consolidates the laws relating to insolvency resolution of individuals, partnership firms and corporate persons** in a time-bound manner.
- **Functions**:
  - The IBBI **regulates professionals as well as processes**.
  - It **has regulatory oversight over the insolvency professional agencies, insolvency professional entities, insolvency professionals and information utilities**.
  - It **enforces rules for processes of corporate insolvency resolution, individual insolvency resolution, corporate liquidation and individual bankruptcy** under the IBC.
  - It **specifies the minimum eligibility requirements** for registration of insolvency professional agencies, insolvency professionals and information utilities and curriculum for the qualifying examination of the, insolvency professionals for their enrolment.
  - It **collects and maintains records relating to insolvency and bankruptcy cases and disseminate information** relating to such cases.
- **Constitution**: The Board consists of the following members who are **appointed by the Central Government,**
  - A **Chairperson**.
  - **Three members from among the officers of the Central Government equivalent or not below the rank of a Joint Secretary**. Out of the three members, each will represent the Ministry of Finance, Ministry of Corporate Affairs and Ministry of Law, ex -officio.
  - **One member nominated by the RBI** (Reserve Bank of India), ex-officio.
  - **Five other members nominated by the Central Government**, out of which **at least three should be whole-time members.**
  - **The term of office of the Chairperson and members** (other than ex-officio members) **is five years or until they attain sixty-five years**,

whichever is earlier, and they are **eligible for re-appointment.**

Wilful defaulters, fraudsters can go for compromise settlement: RBI

Wilful Defaulter

- They are considered as **entities that do not pay back money despite the ability to do so.**
- The concept of '**Wilful Defaulter' was introduced when the RBI**, as per its power under Sections 21 and 35A of the Banking Regulation Act, 1949, **issued the Master Circular, which defined Wilful Defaulter and detailed the measures to be adopted** by the Banks and Financial Institutions (FIs**) to adjudge the instances of default**, i.e., whether the same is a wilful default or not.
- **According to the RBI, a wilful default is deemed to have occurred in any of the following four** circumstances:
    - When there is a **default in repayment obligations by the unit (company/individual) to the lender, even when it has the capacity** to honour the said obligations, there is a deliberate intention of not repaying the loan.
    - The **funds are not utilised for the specific purpose for which finance was availed** but have been diverted for other purposes.
    - When the **funds have been siphoned off** and not been utilised for the purpose for which it was availed. Further, **no assets are available which justify the usage of funds.**
    - When the **asset bought by the lenders' funds have been sold off without the knowledge of the bank/lender.**
- Further, **in cases where a letter of comfort or guarantees furnished by group companies** of wilfully defaulting units **are not honoured when they are invoked by the lende**r, then such group companies are also considered to be wilful defaulters.
- **Consequences:**
    - **Banks and institutions are required to submit the list of suit-filed accounts of wilful defaulters** at the end of every quarter **to the Credit Information Bureau (India) Ltd (CIBIL)**.
    - Banks also **report the names of current directors as well as directors who were associated with the company** at the time the account was classified as a defaulter. This **helps to put other banks and institutions on guard** against such individuals. This **list can also include independent and nominee directors**.

- **A wilful defaulter is not permitted to float any new business for a period of five years** from the date of being declared a wilful defaulter.
- **Lenders are also expected to initiate legal process, which can include criminal proceedings**, if necessary, against the borrowers/guarantors and foreclosure of recovery of dues is expedited.
- **Banks and institutions have been given the right to change the management** of wilfully defaulting company.

- **At present, there is no specific law for legal action against Wilful defaulters**. Reserve Bank of India has framed rules defining wilful default, the process to be followed by banks for declaring borrower as "wilful defaulter". **Banks initiate action against such accounts under laws like SARFAESI Act, Companies Act, 2013, Fugitive Economic Offenders Act etc.**

Farmers block NH 44 in Haryana over sunflower MSP

Farmers in Haryana's Kurukshetra blocked National Highway 44, demanding purchase of sunflower crop at Minimum Support Price (MSP), among other demands.

Farmers, members of '**khaps**' and sportspersons gathered for a *mahapanchayat,* called by the Bhartiya Kisan Union (Charuni) at Pipli town, near NH 44. After the *mahapanchayat*, the farmers gathered on the highway and blocked it.

Crops under MSP

- The Commission for Agricultural Costs & Prices (CACP) recommends MSPs for **22 mandated crops and fair and remunerative price (FRP)** for sugarcane.
  - CACP is an attached office of the Ministry of Agriculture and Farmers Welfare.
- The mandated crops include 14 crops of the kharif season, 6 **rabi crops** and 2 other commercial crops.
- In addition, the MSPs of toria and de-husked coconut are fixed on the basis of the MSPs of rapeseed/mustard and copra, respectively.
- The **list of crops** are as follows:
  - **Cereals (7):** Paddy, wheat, barley, jowar, bajra, maize and ragi,
  - **Pulses (5):** Gram, arhar/tur, moong, urad and lentil,
  - **Oilseeds (8):** Groundnut, rapeseed/mustard, toria, soyabean, sunflower seed, sesamum, safflower seed and niger seed,
  - Raw **cotton,** Raw **jute, Copra,** De-husked **coconut,** and
  - **Sugarcane** (Fair and remunerative price).
- The CACP **considered various factors** while recommending the MSP for a commodity, including **cost of cultivation.**
  - It also took into account the **supply and demand situation** for the

commodity, **market price trends** (domestic and global) and **parity vis-à-vis other crops,** and **implications for consumers** (inflation), **environment** (soil and water use) and **terms of trade between agriculture and non-agriculture sectors.**

Sunflower

Sunflower (Helianthus annuus L.), popularly known as "**Surajmukhi**" (it follows the sun by day) is an **annual flowering plant,** native to **North and Central America** but is now cultivated worldwide for its versatile uses. It is known for its **large, bright yellow flowers**.

Sunflowers are relatively **easy to grow** and are **adaptable** to different climates and soil types. They require **full sun exposure and well-drained** soil. They are known for their ability to **extract heavy metals from the soil,** making them useful in **phytoremediation efforts** to clean up polluted areas.

Govt hurting most marginalised sections: Congress on Centre discontinuing sale of rice, wheat under OMSS to state govts

Open Market Sale Scheme (OMSS)

- Under OMSS, the **Food Corporation of India** (FCI) **sells surplus stocks of wheat and rice at pre-determined prices through e-auction in the open market.**
- **Objective**: To **enhance the supply of food grains**, especially wheat, during the lean season and thereby **moderate the open market prices,** specially in the deficit regions.
- The FCI **conducts a weekly auction** to conduct this scheme **in the open market using the platform of commodity exchange NCDEX**(National Commodity and Derivatives Exchange Limited).
- The **State Governments/ Union Territory Administrations are also allowed to participate** in the e-auction**, if they require wheat and rice outside the** Targeted Public Distribution Scheme (**TPDS**) and Other Welfare Schemes (**OWS**).
- The **reserve price is fixed by the government**. In the tenders floated by the FCI, the **bidders cannot quote less than the reserve price**.
- The present form of OMSS **comprises 3 schemes as under**:
    - **Sale of wheat to bulk consumers**/private traders **through e-auction.**
    - **Sale of wheat to bulk consumers**/private traders **through e-auction by dedicated movement.**
    - **Sale of Raw Rice Grade 'A' to bulk consumers**/private traders **through e-auction**.

Food Corporation of India (FCI)

- It is a **statutory body set up in 1965** (under the **Food Corporation Act, 1964**) against the **backdrop of major shortage of grains**, especially wheat, in the country.
- It comes under the ownership of the **Ministry of Consumer Affairs, Food and Public Distribution**, Government of India.
- **Headquarters: New Delhi**
- FCI was **mandated with three basic objectives:**
    - to **provide effective price support to farmers**;
    - to **procure and supply grains to PDS** for distributing subsidized staples to economically vulnerable sections of society;
    - **keep a strategic reserve** to stabilize markets for basic foodgrains;

How Sebi's 'execution only platforms' for MFs remove regulatory grey area

Execution only platform (EOP)

- It is a **digital or online platform** which **facilitates transactions such as subscription**, redemption and switch transactions in **direct plans of schemes of mutual funds.**
- Till now, there was no specific framework available for technology/digital platforms (including platforms provided by Investment Advisers/Stock Brokers to non-clients) to provide execution-only services in direct plans of mutual fund schemes.
- As per the new SEBI's new guidelines, **no entity would be allowed** to operate as an EOP without obtaining registration from SEBI or the Association of Mutual Funds in India (AMFI).
- **Categories of EOP:** The capital markets regulator has divided EOPs into two categories.
    - **Category 1 EOPs:** These would **need to be registered with AMFI**, the mutual fund industry body.
    - Under this category, the EOPs would act **as an agent of asset management companies** (AMCs) and integrate their systems with AMCs and/or Registrar and Transfer Agents (RTAs) authorized by AMCs to facilitate transactions in mutual funds.
    - These entities may act **as an aggregator of the transactions in direct plans** of schemes of mutual funds and provide services to investors or other intermediaries.
    - **Category 2 EOPs:** These would need to be **registered as a stock broker with SEBI** and can operate as an agent of investors and operate only

through the platforms provided by the stock exchanges.

Mutual Fund

- It is a **pool of money managed** by a professional Fund Manager.
- It is a trust that collects money from a number of investors who share a common investment objective and **invests the same in equities, bonds, money market** instruments and/or other securities.

NaBFID lists maiden bonds of ₹10,000 crore

NaBFID

- It was set up in 2021, by **an Act of the Parliament** (The National Bank for Financing Infrastructure and Development Act, 2021).
- It is a specialized **Development Finance Institution** in India.
- **Objectives:** Addressing the gaps in long-term non-recourse **finance for infrastructure development,** strengthening the development of bonds and derivatives markets in India, and sustainably boosting the country's economy.
- It shall be **regulated and supervised by RBI** as an All-India Financial Institution (AIFI)

Development Finance Institution (DFI)

- These are organizations **owned by the government or public institutions** to provide funds for infrastructure and large-scale projects, where it often becomes unviable for large banks to lend.
- They provide two types of funds- **Medium (1-5 years) and Large (< 5 years).**

RBI Imposes Rs20 Lakh Penalty on Manappuram Finance

Non-Banking Financial Company (NBFC)

- An NBFC is a **company registered under the Companies Act 1956** engaged in the **business of loans and advances, acquisition of shares/stocks/bonds/debentures/securities** issued by the Government or local authority or other marketable securities of a like nature.
- They offer **various banking services but do not have a banking license**.
- They **provide banking services like loans, credit facilities, TFCs**, retirement planning, **investing and stocking** in the money market.
- Generally, **these institutions are not allowed to take traditional demand deposits**—readily available funds, such as those in checking or savings accounts—**from the public**.
- NBFCs also **provide a wide range of monetary advice like chit-reserves and advances**.

- **Regulation**:
  - NBFCs are **regulated by the Reserve Bank of India (RBI**), the central bank of India.
  - **The RBI has the authority to issue licenses to NBFCs, regulate their operations**, and ensure that they adhere to the established norms and regulations.
- **Banks vs NBFCs**: NBFCs lend and make investments and, hence their activities are akin to that of banks; however, there are a few differences as given below,
  - NBFC **cannot accept demand deposits**;
  - **NBFCs do not form part of the payment and settlement system** and **cannot issue cheques drawn on itself;**
  - **Deposit insurance facility of Deposit Insurance and Credit Guarantee Corporation is not available** to depositors of NBFCs, unlike in case of banks.
  - Unlike banks, **NBFCs are not subjected to stringent and substantial regulations.**
- **Examples** of NBFCs include **investment banks, mortgage lenders, money market funds, insurance companies,** equipment leasing companies, infrastructure finance companies, hedge funds, private equity funds, and P2P lenders.

India examining recommendation to impose countervailing duty on Chinese steel imports

Countervailing duty (CVD)

- It is a specific form of **duty that the government imposes to protect domestic producers by countering the negative impact of import subsidies**.
- CVD is thus an **import tax by the importing country on imported products.**
- The **World Trade Organization (WTO) permits the imposition of CVD** by its member countries.
- *Why is CVD imposed?*
  - **Foreign governments sometimes provide subsidies to their producers to make their products cheaper** and boost their demand in other countries.
  - To **avoid flooding the market in the importing country with these goods**, the government of the importing country imposes CVD, charging a specific amount on the import of such goods.
  - The **duty nullifies and eliminates the price advantage enjoyed** by an

imported product.
    - The **duty raises the price of the imported product**, bringing it closer to its true market price
- *Who administers CVD in India?*
    - The countervailing measures in India are **administered by the Directorate General of Anti-dumping and Allied Duties (DGAD)**, in the commerce and industry ministry's **department of commerce**.
    - While the **department of commerce recommends the CVD,** the **department of revenue in the finance ministry acts upon the recommendation** within three months **and imposes such duties**.

Anti-dumping duty (AD)

- It is a protectionist **tariff that a domestic government imposes on foreign imports that it believes are priced below fair market value.**
- **Dumping is a process wherein a company exports a product at a price** that is **significantly lower** than the price **it normally charges in its home** (or its domestic) market.

Countervailing duty v/s Anti-dumping duty

- **AD is imposed to prevent low-priced foreign goods from damaging the local market**. On the other hand, C**VD will apply to foreign products that have enjoyed government subsidies**, which eventually leads to very low prices.
- While the **AD duty amount depends on the margin of dumping**, **the CVD** amount will completely **depend upon the subsidy** value of the foreign goods

Shri Narendra Singh Tomar launches PM Kisan Mobile App

- The newly launched application **has the feature of face Authentication.**
- From this app, farmers can complete e-KYC remotely, sitting at home easily by scanning their face without OTP or fingerprint.
- The app was designed and developed by the **National Informatics Centre** in collaboration with the **Ministry of Electronics and Information Technology.**

PM Kisan Samman Nidhi (PM-KISAN)

- It is a **Central Sector scheme with 100% funding** from the Government of India.
- **Objective:** The scheme aims to **supplement the financial needs of the farmers** in procuring various inputs to ensure proper crop health and appropriate yields commensurate with the anticipated farm income.
- **Benefits and Eligibility Conditions:**
    - Under the scheme, an income **support of 6,000/- per year** in three

equal instalments will be provided to all land-holding farmer families.
    - The definition of family for the scheme is husband, wife and minor children.
- **State Government and UT administration** will **identify the farmer** families which are eligible for support as per scheme guidelines.
- The fund will be directly **transferred to the bank accounts of the beneficiaries.**
- The following categories of beneficiaries shall not be eligible for benefits under the scheme:
    - All Institutional Landholders.
    - Farmer families which belong to one or more of the following categories:
    - Former and present holders **of constitutional posts.**
    - Former and present Ministers/ State Ministers and former/present Members of Lok Sabha/ Rajya Sabha/ State Legislative Assemblies/ State Legislative Councils, former and present Mayors of Municipal Corporations, former and present Chairpersons of District Panchayats.
    - All superannuated/retired pensioners whose monthly pension is Rs.10,000/-or more (Excluding Multi-Tasking Staff / Class IV/Group D employees) of the above category
    - All Persons who paid **Income Tax in the last assessment year**
    - Professionals like Doctors, Engineers, Lawyers, Chartered Accountants, and Architects are registered with Professional bodies and carry out their profession by undertaking practices.

Why jeera prices are shooting up in wholesale markets

Jeera (Cumin)

- It is an **aromatic seed** that adds an extra punch of taste to Indian dishes.
- It is believed that Jeera is **native to the Mediterranean region,** and it was well-known in Ancient Egypt, Greece, and Rome.
- Its oil is reported to have **antibacterial activity** and is also used in veterinary medicines and various other industries.
- **Climatic condition required**
    - It grows well in both **tropical and sub-tropical** climates, and it comes up well in all types of soils, but well-drained sandy loam soils are best suited.
    - It is a highly **weather-sensitive crop.**
    - It requires a **moderately cool and dry climate** without any humidity.

- It is a **Rabi crop** and is cultivated mainly in **Gujarat and Rajasthan.**
- It is sown from October to November and harvested in February and March.

Major producers of Jeera

- **India** accounts for some **70% of the world's production** of this seed spice.
- Other countries such as **Syria, Turkey, UAE and Iran** make up the balance 30%.

Banks readying systems to track spends on outward remittances

Liberalised Remittances Scheme (LRS)

- LRS **allows Indian residents to freely remit up to USD $250,000 per financial year for current or capital account transactions** or a combination of both. Any remittance exceeding this limit requires prior permission from the RBI.
- The scheme was **introduced by RBI on February 4, 2004.**
- **Who can remit funds under LRS?**
    - **Only individual Indian residents, including minors**, are permitted to remit funds under LRS.
    - **Corporates, partnership firms, HUF, trusts**, etc., **are excluded** from its ambit**.**
- **Frequency of Remittances:**
    - There are **no restrictions on the frequency** of remittances under LRS.
    - **Once a remittance is made for an amount up to USD 2,50,000** during the financial year, a resident individual **would not be eligible to make any further** remittances under this scheme.
- **Types of transactions permitted:**
    - **Opening of foreign currency accounts abroad** with a bank;
    - **Acquisition of immovable property abroad**, overseas direct investment (ODI), and overseas portfolio investment (OPI);
    - **Extending loans**, including loans in Indian Rupees to non-resident Indians (NRIs) who are relatives as defined in the Companies Act, 2013;
    - **Private visits abroad**(excluding Nepal and Bhutan);
    - **Maintenance of relatives abroad**;
    - **Medical treatment** abroad;
    - **Pursuing studies** abroad;
- The **Union Budget 2023 introduced a Tax Collection at Source (TCS) for outward foreign remittance under LRS** (other than for Education and medical purpose) **of 20%** on the entire value.

- **Tax liability on profit made**: **If any profit is made** on foreign investments made under LRS, **it is taxable in India based on how long the investment was held.**

Slowdown visible in India's startup story as only three unicorns added in 2023: Report

Unicorn Startup

- The term unicorn refers to a **privately held startup company with a value of over $1 billion.**
- It is commonly **used in the venture capital industry**. The **term was first popularised by venture capitalist Aileen Lee** when she referred to the 39 startups that had a valuation of over $1 billion as unicorns.
- **The valuation of unicorns** is not expressly linked to their current financial performance but is **largely based on their growth potential, as perceived by investors** and venture capitalists who have taken part in various funding rounds.
- There are **more than 1,000 unicorn companies around the world as of March 2022**.

Gazelles and Cheetahs in the Startup ecosystem

- **Gazelles:**
  - They are those start-ups founded after the year 2000 and **have the potential to go Unicorn in 2 years.**
  - Their **valuation ranges from US$500mn to US$1bn.**
  - Once you exceed the $1 bn valuation, you become a unicorn.
- **Cheetahs:**
  - They are those start-ups founded after the year 2000 and **have the potential to become a Unicorn in the next four years.**
  - Their estimated **valuation ranges between US$200mn to US$500mn**.

Shri Narayan Rane launches 'CHAMPIONS 2.0 Portal', 'Mobile App for Geo-tagging of Cluster Projects, Technology Centers' and 'MSME Idea Hackathon 3.0' for women entrepreneurs

CHAMPIONS 2.0 Portal

- Champions portal is a **single-window grievance redressal** portal for Micro, Small & Medium Enterprises.
- The CHAMPIONS stands here for the Creation and Harmonious Application of Modern Processes for Increasing Output and National Strength. Accordingly, the name of the system is CHAMPIONS.

- It was launched on June 1, 2020, by **the Ministry of Micro, Small & Medium Enterprises.**
- It is created in a **Hub & Spoke Model.**
- The Hub is situated in New Delhi in the Secretary MSME's office. The spokes will be in the States in various offices and institutions of the Ministry.
- As per the operational requirements, the MSME Ministry had earlier expanded the scope of the portal by onboarding 25 ministries/departments/ government institutions, 32 state governments, 58 banks/
- **New Features:**
    - The revamped portal will now incorporate **AI-driven chatbots** and will be available in **11 languages,** including Hindi, Gujarati, Bengali, and Kannada.
    - The portal will also have a real-time **feedback mechanism for its analysis.**

Biofertilizer scheme gets Cabinet nod; sugarcane FRP hiked

PM-PRANAM scheme

- It aims to reduce the **use of chemical fertilisers by incentivising the state.**
- Under the scheme, the states **which will adopt alternative fertilisers** will be incentivised with the subsidy that is saved by reducing the use of chemical fertilisers.
- The main objective of the scheme is to encourage the **balanced use of fertilisers** in conjunction with bio fertilisers and organic fertilisers.
- **Funding mechanism:**
    - It will **not have a separate budget.**
    - It will be financed by the savings of existing fertiliser subsidies under schemes.
    - **Half of the subsidy savings** will be **passed on to the state** that saves the **money as a grant.**
    - Out of this grant, 70% can be used to **create assets related to the technological adoption** of alternate fertilisers and alternate fertiliser production units at the village block, and district levels.
    - The remaining 30% of grant money can be used to reward and **encourage farmers, panchayats, and other stakeholders** involved in fertiliser reduction and awareness generation.
- The government will evaluate the utilisation of fertilisers in terms of increase or decrease in overall consumption in a year vis-a-vis **consumption over the past three years.**

- The **Integrated Fertilisers Management System** (iFMS) is the platform envisaged to track the use of fertilisers.

SEBI Halves Public Issue Listing Time To Three Days

Public Issue of shares

- When a **company raises funds by selling or issuing its equity shares to the public through an offer document,** it is called a public issue.
    - **Initial Public Offerings (IPO):** IPO is a type of issue where an **unlisted company raises capital by making a fresh issue of securities** or offering its existing securities for sale **to the public for the first time.**
    - **Further Public Offer (FPO) / Follow-on Public Offer (FPO):** When a **listed company** wants additional capital, it m**akes either a fresh issue of securities or an offer for sale of existing securities to the public** it is called a Follow-on Public Offer (FPO).
    - **Offer for Sale (OFS):**
        - Institutional investors like venture funds, private equity funds etc., invest in a company at its nascent stage.
        - Once the company grows bigger, these investors sell their shares to the public through the issue of an offer document and subsequently, shares get listed on the stock exchange.
        - Offer for sale (OFS) is also a **special mechanism through which the promoters can sell their stake in the market.**
        - **Only promoters or shareholders holding more than 10% of the share capital in a company can come up with such an issue**.
        - **Both retail and institutional investors can invest in an OFS** and buy shares of the Company.

Govt removes extra import duty on US apples: How it can impact domestic growers

GOI has removed a 20% retaliatory duty on apple imports from the US as part of a deal where the latter restores market access for Indian steel and aluminium products.

- The first is that US apples will continue to attract a 50% import duty. This duty is applicable on apples imported from all countries.
- The Government has merely done away with an additional 20% duty on American apples. That was imposed on June 15, 2019, as a retaliatory measure to the then Donald Trump administration levying tariffs of 25% on steel and 10% on many aluminium products imported from India.

- Besides apples, India had also slapped retaliatory duties on US almonds, walnuts, chickpeas (*chana*) and lentils (*masoor*). These have all now been removed and American imports will be treated on part with imports from other countries.

The timing of the move — giving a level playing field with its competitors — would help. Harvesting of Washington apples starts from August and extends till early-November. It allows for import of fresh fruit into India from mid-September through November. This is followed by supplies from cold-stored apples during December-January and, then, from **controlled-atmosphere (CA) chambers** from February right up to August.

CA storage entails manipulating the carbon dioxide (CO2) and oxygen (O2) concentration, along with temperature and humidity, in the chambers for increasing the shelf life of the fruits. Apples, like humans, breathe through intake of O2 and release of CO2. Respiration, however, also leads to ripening of fruits. By lowering the concentration of O2 and raising that of CO2, the respiration is slowed down, thereby extending fruit storability and minimum change in quality characteristics.

Storage Systems: Controlled and Modified Atmosphere Storage

Controlled storage

- Controlled storage can be defined as the process of constant monitoring and adjustments in the oxygen and carbon dioxide levels in air-tight containers and storage. **Controlled atmosphere storage** is a vital innovation that helps in reducing the adverse effects of storage on the shelf life of vegetables and fruits. This is done by controlling the gas composition in the storage facilities that eventually control the storage life.
- **Controlled atmosphere storage** consists of reducing the oxygen and increasing the carbon dioxide levels according to the ambient atmospheric conditions. However, sometimes it also deals with removing ethylene and adding carbon monoxide.
- Controlled atmospheric storage refers to the continuous monitoring and adjustments in the gases of the storage containers accordingly.
- Whereas the modified atmospheric storage does not deal with the active control of gas, it only deals with the packaged atmosphere created by the respiration in the freshly produced items.
- Various processed fruits and veggies are stored in modified atmosphere packages to control aging and increase the shelf life. In the early twentieth century, Kidd and West developed the technology to control and monitor the atmospheric system.
- The world has seen the global use of this technology in the short and long term

to manage and meet market demands.

Modified Atmosphere Storage

- **Modified atmosphere storage** refers to modifying atmospheric conditions, generally temperature and humidity, to enhance the storage life of several perishable crops like atemoya.
- The **storage system** is crucial for any crop as it controls the life cycle of the yield, and an improper temperature and storage environment can result in damaged stored crops.
- Modifying the atmosphere, packing the fruits in PVC film, and storing the fruit in polyester trays wrapped in PVC film do not influence the fruit's skin colour. However, it significantly reduces weight loss compared to a non-packet fruit and preserves the pulp brightness. Various studies and research has been done on comparison of the weight loss in the packet fruit and unpacked fruit, and they show a significant lowering in weight loss of the packet fruit.
- Fruits sealed in LDPE remain raw and do not ripen as the packing develops an injurious atmosphere inside.
- Research shows that atemoya fruit, when packaged in PD-955 film and stored in storage at 15 degrees, offers a shelf life of 17 days which is far better than the 13 days shelf life of control fruit.

Effects of Modified Oxygen and Carbon-dioxide Levels on Crops

- Modified O2 levels
- Reduced rate of respiration
- Less oxidation of the substrate
- Delay in the ripening of climacteric fruit
- Reduced ethylene production rate
- Development of several physiological disorders

Modified CO2 Levels

- Reduced distortion
- Reduced fungal growth
- Often results in the production of off-flavours
- Inhibits some enzymatic reactions

Centre proposes draft rules for Green Credit Programme

The Union Ministry of Environment, Forests and Climate Change has notified draft rules for 'Green Credit', an incentive that individuals, farmer-producer organisations (FPO), industries, rural and urban local bodies, among other stakeholders, will be able to earn for environment positive actions.

By 'green credit', the government means a singular unit of an incentive provided for a specified activity, delivering a positive impact on the environment.

The activities include:

1. Tree plantation-based green credit: To promote activities for increasing the green cover across the country through tree plantation and related activities
2. Water-based green credit: To promote water conservation, water harvesting and water use efficiency / savings, including treatment and reuse of wastewater
3. Sustainable agriculture-based green credit: To promote natural and regenerative agricultural practices and land restoration to improve productivity, soil health and nutritional value of food produced
4. Waste management-based green credit: To promote sustainable and improved practices for waste management, including collection, segregation and treatment
5. Air pollution reduction-based green credit: To promote measures for reducing air pollution and other pollution abatement activities
6. Mangrove conservation and restoration-based green credit: To promote measures for conservation and restoration of mangroves
7. Ecomark-based green credit: To encourage manufacturers to obtain 'Ecomark' label for their goods and services
8. Sustainable building and infrastructure-based green credit: To encourage the construction of buildings and other infrastructure using sustainable technologies and materials

Through the programme, thresholds and benchmarks will be developed for each green credit activity.

The **Indian Council of Forestry Research and Education** shall be the administrator of the programme. The institute will develop guidelines, processes and procedures for implementation of the programme and develop methodologies and standards, registration process and associated measurement, reporting and verification mechanisms.

The green credits will be tradable and those earning it will be able to put these credits up for sale on a proposed domestic market platform.

It was first announced by Union Finance Minister Nirmala Sitharaman in the 2023-24 budget with a view to leverage a competitive market-based approach and incentivise voluntary environmental actions of various stakeholders.

INTERNATIONAL RELATIONS

Jaishankar to meet Lavrov, Qin during BRICS summit

- External Affairs Minister visit to South Africa and Namibia, beginning with his attendance at the BRICS (Brazil-Russia-India-China-South Africa) Foreign Ministers' meeting in Cape Town.
- The FMs will finalise the agenda for the BRICS summit in August, with plans to expand the grouping and discuss a "BRICS currency", seen as a counter to the U.S. dollar, and meant to circumvent western sanctions against Russia.
- The "Friends of BRICS" or "BRICS Plus" conference on Friday will include 15 Foreign Ministers from Africa and the Global South.

Seeking consensus

- Efforts to bring them on board on a joint statement failed at both the G-20 Finance and Foreign Ministers' meetings in India earlier this year.
- During the conference, FM is expected to stress on India's priorities for the Global South, including mitigating the economic impact of the Ukraine war, as well as the importance of territorial sovereignty and cooperation against terrorism.
- As BRICS is mainly an economic engagement, all eyes will be on whether the BRICS FMs agree to move forward with the plan for a BRICS currency initiative that would propose an alternative currency based on gold, commodities and critical minerals.

India, Nepal sign pacts on energy, transport

- The border between India and Nepal should not become a barrier, Prime Minister as the two sides signed a series of agreements on energy and transport, including export of Nepal's hydropower to Bangladesh through Indian territory.
- A long-term Power Trade Agreement has been signed between India and Nepal. Under this agreement, we have set a target of importing 10,000 MW of electricity from Nepal in the coming years. Focusing on energy cooperation, and a new pipeline will be constructed from Siliguri to Jhapa in eastern Nepal.
- The two sides signed a number of agreements, including an MoU between NHPC and VUCL (Vidyut Utpadan Company Ltd.) of Nepal, for the development of **Phukot Karnali Hydroelectric Project** and a Project Development Agreement for **Lower Arun Hydroelectric Project** between SJVN (India) and Investment Board of Nepal.

Saudi pledges big oil cuts in July as OPEC+ extends deal into 2024

OPEC+:

- It is a group of **23 oil-exporting countries** which meets regularly to decide how much crude oil to sell on the world market.
- These nations aim to **work together on adjusting crude oil production to bring stability** to the oil market.
- **At the core of this group are the13 members of OPEC** (the **Organization of the Oil Exporting Countries)**, which are mainly Middle Eastern and African countries.
- **Members**: It comprises **13 OPEC countries plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan, and Oman**.

Organization of the Petroleum Exporting Countries(OPEC):

- It is a permanent **intergovernmental organization of oil-exporting countries.**
- **Mission**:
    - To **coordinate and unify the petroleum policies** of its Member Countries.
    - Ensure the **stabilization of oil prices in the international oil markets**, with a view to eliminating harmful and unnecessary fluctuations.
- **Formation**: It was **established in 1960 by the five founding members Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.**
- **Currently, it has 13 members**, including **Algeria, Angola, Congo, Equatorial Guinea, Gabon, Libya, Nigeria, and the United Arab Emirates**
- **Headquarters: Vienna, Austria.**

India, U.S. review export control regulations

- India and the U.S. pledged to streamline their export control regimes for critical technologies at the inaugural India-U.S. Strategic Trade Dialogue (IUSSTD)
- The talks came just ahead of Prime Minister's visit to Washington when a number of high-technology partnerships, including a deal that will involve GE-414 jet engine sales to India, are on the cards.
- IUSSTD focused on ways in which both governments can facilitate the development and trade of technologies in critical domains such as semiconductors, space, telecom, quantum, AI, defence, bio-tech and others
- Both sides reviewed the relevant bilateral export control regulations with the objective of building and diversifying resilient supply chains for these strategic technologies

Pakistan, Turkmenistan ink Joint Implementation Plan for TAPI gas pipeline

TAPI Pipeline

- It is an **1,814kilometre pipeline** that aims to **transport 33 billion cubic metres of gas from Turkmenistan to Afghanistan, Pakistan and finally, India.**
- It is also called the '**Peace Pipeline'.**
- **Route**:
    - It will **start from the Galkynysh gas field in Turkmenistan**.
    - It will then **pass through Afghanistan and Pakistan** to **finally reach the Indian town of Fazilka**(near the Indo-Pak border).
- **Capacity**: At full capacity, the pipeline will t**ransport 33 billion cubic meters (bcm) of natural gas** annually from TKM **to respective buyers in AFG (5%), PAK (47.5%) and IND (47.5%) during the 30-year** commercial operations period.
- The Project comprises the procurement, installation and operation of the pipeline and related facilities within Afghanistan and Pakistan.
- **Timeline**:
    - The project was **originally conceived in the 1990s,** and an **inter-governmental agreement was signed in 2010** by the heads of four member nations.
    - A Gas Pipeline **Framework Agreement was signed in December 2010,** and a **bilateral gas sale agreement was signed in May 2013.**
    - **In February 2018, a ground-breaking ceremony for Afghanistan's section of the TAPI gas pipeline was held** in the western Afghan city of Herat.
- **Financing**:
    - The TAPI project is being **funded by the Asian Development Bank (ADB**), which is **also acting as transaction adviser** for the development.
    - **Turkmenistan took a loan of $700m** from the Islamic Development Bank for financing the project in December 2016.
    - The **remaining three countries made an initial investment of $200m** in the TAPI project.

Kosovar President Open To New Elections In Areas Of Northern Kosovo Where Clashes Occurred

Kosovo-Serbia tensions

- Kosovo is a **mainly ethnic Albanian populated territory** that was **formerly a province of Serbia**. It **declared independence in 2008.**
- **Serbia has refused to recognize Kosovo's statehood** and **still considers it**

part of Serbia, even **though it has no formal control there.**

- **Kosovo's independence has been recognized by about 100 countries**, including the United States.
- **Russia, China and five EU countries**, most of them with separatist regions of their own, **have sided with Serbia.**
- **The deadlock has kept tensions simmering and prevented full stabilization** of the Balkan region **after the bloody wars in the 1990s.**
- **What's the latest flare-up about?**
    - **After Serbs boycotted last month's local elections** held in northern Kosovo, **where Serbs represent a majority, newly elected ethnic Albanian mayors moved into their offices** with the help of Kosovo's riot police.
    - **Serbs tried to prevent them** from taking over the premises, **but police fired tear gas to disperse them.**
    - **Serbs staged a protest in front of the municipality buildings**, **triggering a tense standoff** that resulted in fierce clashes between the Serbs and the Kosovo peacekeepers and local police.
- **How deep is the ethnic conflict in Kosovo?**
    - The dispute over Kosovo is **centuries old**. **Serbia cherishes the region as the heart of its statehood** and religion.
    - **Numerous medieval Serb Orthodox Christian monasteries are in Kosovo**. Serb nationalists view a 1389 battle against Ottoman Turks there as a symbol of their national struggle.
    - **Kosovo's majority ethnic Albanians view Kosovo as their country** and accuse Serbia of occupation and repression. E**thnic Albanian rebels launched a rebellion in 1998 to rid the country of Serbian rule**.
    - **Serbia's brutal response prompted a NATO intervention in 1999**, which forced Serbia to pull out and cede control to international peacekeepers.
- **What is the situation locally?**
    - There are **constant tensions between the Kosovo government and the Serbs who live mainly in the north of the country** and keep close ties with Serbia.
    - **Attempts by the central government to impose more control in the Serb-dominated north are usually met with resistance from Serbs**.

BIMSTEC to focus on connectivity; to adopt Bangkok vision 2030 at next

summit

Bangkok Vision 2030

- Thailand presented "**BIMSTEC Bangkok Vision 2030"** aiming to build a **Prosperous, Resilient, and Open (PRO)** BIMSTEC by 2030.
- The Vision sets a clear direction and priorities as well as a goal for BIMSTEC collaboration to tackle challenges and seize opportunities for the coming decade.
- The document aims to further promote BIMSTEC as a **region of peace, stability, and economic sustainability.**
- The goals found in the vision are also in line with the United Nations' Sustainable Development Goals and Thailand's bio-circular-green economic model.

BIMSTEC

- It is a regional organization that was established on 06 June 1997 with the signing of the **Bangkok Declaration.**
- **Member countries:**Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan and Nepal
- The **Chairmanship** of BIMSTEC **rotates** according to the **alphabetical order of the English names of the Member States.**
- During the Third BIMSTEC Summit, the **Secretariat** was established **in Dhaka,** Bangladesh.

PM Modi To Visit 11th Century Al-Hakim Mosque In Egypt

Al-Hakim Mosque

- **Location**: It is a historical mosque located in **Cairo, Egypt**.
- It is **named after Al-Hakim bi-Amr Allah (985–1021 AD**), the **sixth Fatimid caliph.**
- The mosque was **originally built by the Fatimid vizier Gawhar Al-Siqilli**, but was **incorporated into the extended fortifications** built by Badr al-Jamali **at the end of the 11th century AD.**
- The mosque was **inscribed as a UNESCO World Heritage Site in 1979.**
- **Architecture**:
    - The mosque is **constructed of brick with stone facades and minarets**.
    - The **plan of the mosque consists of a triangle with four arcades centering a courtyard.** Two minarets flank either side of the façade.
    - **Originally built outside Cairo's northern wall**, the **mosque was incorporated within the city in 1087,** transforming its own northern

wall and minarets into an integral part of the fortifications.

- The **main entrance lies on the western facade of the mosque** and is monumental in size and design. **It is one of the oldest architectural examples of projecting entrances.**

Dawoodi Bohra community

- Dawoodi Bohra community **is a sect within Shia Islam known for trading and business acumen.**
- **India is known to have around 500,000 Bohras,** including the diasporas spread across the world.
- A large number of the Dawoodi Bohra population **reside in India, Yemen, Pakistan and East Africa.**
- The Dawoodi Bohras **also regard the Quran as the word of Allah** as revealed to Prophet Mohammed al-Mustafa, and **their lives revolve around its teachings**.
- The Dawoodi Bohras throughout the world are g**uided by their leader, known as the al-dai al-mutlaq (unrestricted missionary), who first operated** from Yemen and then, **for the last 450 years, from India.**

UN adopts world's first treaty to protect the high seas

- Nearly **200 nations signed the document**, officially known as the **Biodiversity Beyond National Jurisdiction Treaty,** after agreeing to its terms in March following roughly **15 years of discussion.**
- The treaty is meant "**to prevent a cascading of species extinctions"** brought on by overfishing, oil extraction, deep-sea mining and other activities with environmental impacts that occur in the high seas.

UN High Seas Treaty

- It is the **first-ever treaty to protect the world's oceans that lie outside national boundaries.**
- It is also **known as the 'Paris Agreement for the Ocean.'**
- It is a **legally binding treaty** that a**ims at protecting, caring for, and ensuring the responsible use of the marine environment,** maintaining the **integrity of ocean ecosystems, and conserving** the inherent value of **marine biological diversity**.
- The treaty **is built on the legacy of the UN Convention on the Law of the Sea (UNCLOS)**, which is the **last international agreement on ocean protection**, signed 40 years ago in 1982. UNCLOS **established an area called the high seas**.
- **Highlights of the treaty:**

- It **aims to place 30% of the seas into protected areas by 2030**(a pledge made by countries at the UN biodiversity conference in 2022).
- It will **provide a legal framework for establishing vast marine protected areas (MPAs)** to protect against the loss of wildlife and share out the genetic resources of the high seas.
- It also **covers environmental assessments to evaluate the potential damage** of commercial activities, such as deep-sea mining.
- The treaty **aims at strengthening resilience and contains provisions based on the polluter-pays principl**e as well as mechanisms for disputes.
- The treaty **offers guidance**, including through an integrated approach to ocean management that builds ecosystem resilience **to tackle the adverse effects of climate change and ocean acidification**, and maintains and **restores ecosystem integrity**, including carbon cycling services.
- Treaty provisions also **recognize the rights and traditional knowledge of indigenous peoples** and local communities, the **freedom of scientific research**, and need for the **fair and equitable sharing of benefits**.
- The treaty also **considers the special circumstances facing small-island** and **landlocked developing nations.**
- It **will establish a conference of the parties (CoP)**that will meet periodically and **enable member states to be held to account on issues** such as governance and biodiversity.
- The treaty **also includes a pledge by signatories to share ocean resources**.

High Seas

- The **high seas begin at the border of countries' exclusive economic zones, which extend up to 370km** (200 nautical miles) from coastlines.
- **Beyond that point, the seas are under the jurisdiction of no country**, and **all countries have a right** to fish, ship, and do research.
- **They make up more than 60%** of the world's oceans by surface area.
- **Activities on the high seas are often unregulated** and insufficiently monitored, leaving them vulnerable to exploitation.

22 Indian fishermen arrested for poaching in Sri Lanka's territorial waters: Sri Lanka Navy

Territorial waters

- Territorial waters, under the United Nations Convention on the Law of the Sea (UNCLOS), is that **area of the sea immediately adjacent to the shores of a country and subject to the territorial jurisdiction of that country.**
- The territorial sea **extends to a limit of 12 nautical miles from the baseline of a country's coast.**
- *Territorial waters*
    - Within its territorial waters, a **country exercises full sovereignty over the air space above the sea and over the seabed and subsoil**.
    - The **government can legislate on matters** concerning the safety of navigation, the preservation of the environment, and the prevention, reduction, and control of pollution within its territorial waters.
    - **Resource use within the territorial sea is strictly reserved for the coastal nation**.
    - **All countries have the right of innocent passage**(a passage that is not prejudicial to the security of the coastal country) through the territorial sea of another country. However, there is no right to innocent air space passage.
    - The right of innocent passage **does not apply to submerged submarines, nor does it include a right to fish**.

United Nations Convention on the Law of the Sea (UNCLOS):

- The UNCLOS, **also known as** the **Law of the Sea, was adopted in 1982.**
- It lays down a **comprehensive regime of law and order in the world's oceans and seas, establishing rules governing all uses of the oceans and their resources**.
- There are many provisions under UNCLOS which **regulate and control the functioning and claims of nations on the world's oceans and seas**.
- The convention was **ratified by 168 parties**, which included **167 states and the European Union**.
- **India is a state party** to the UNCLOS.
- UNCLOS, as the currently prevailing law of the sea**, is ultimately binding.

Exclusive Economic Zone

- Exclusive economic zone (EEZ), as defined under the UNCLOS, **is an area of the ocean extending up to 200 nautical miles (370 km) immediately offshore from a country's land coast in which that country retains exclusive rights to the exploration and exploitation of natural resources.**

India joins US-led critical mineral club, boost likely for EV, electronics

- It is an ambitious new initiative to **bolster critical mineral supply chains**,

announced by the **United States (US) and key partner countries** in June 2022.

- The goal of the alliance is to **ensure that critical minerals are produced, processed, and recycled** in a manner that supports the ability of countries to **realise the full economic development benefit** of their geological endowments.
- The focus of the grouping would be on the **supply chains of minerals such as Cobalt, Nickel, Lithium** and also the **17 "rare earth" minerals**.

Critical mineral

- There is no global definition of critical minerals, but essentially, they are **mineral deposits with high economic vulnerability** and **high global supply chain risk**.

Major critical minerals

- The **major critical minerals are Graphite, Lithium and Cobalt.**
- They are **used for making EV batteries** and are also critical for **making semiconductors** and **high-end electronics** manufacturing.
- These minerals are also used in **manufacturing fighter jets**, drones, radio sets and other critical equipment.

Top producers

- The **major producers** of critical minerals globally are **Chile, Indonesia, Congo, China**, Australia and South Africa.

Rare earth elements

- The 17 rare earth elements (REE) include the **15 Lanthanides** (atomic numbers 57 — which is Lanthanum — to 71 in the periodic table) **plus Scandium** (atomic number 21) **and Yttrium (39)**.

PM Modi in Egypt Live Updates: In second leg of two-nation tour, Modi to pay State visit to Egypt

Heliopolis Memorial

- It is part of the larger **Heliopolis Commonwealth War Graves Cemetery**.
- This memorial commemorates the memory of 3,727 **Indian soldiers** who died fighting in various campaigns in **Egypt and Palestine in the First World War**.
- The original Port Tewfik memorial was unveiled in 1926 and was situated at the entrance to the Suez Canal.
- The memorial was destroyed in the Israeli-Egyptian War of 1967 by retreating Egyptian soldiers, and a new memorial was erected in Heliopolis Commonwealth War Grave Cemetery in 1980.
- The Indian troops played a key role in **securing the Suez Canal** in Egypt and

in Palestine, where Indian cavalry participated in **the Battle of Haifa** and also played a **key role in Mesopotamia** in the First World War.

- Port Tewfik is now known **as Port Suez**

Port Suez

- It is located in Egypt along the **northern coastline of the Gulf of Suez.**
- The port and city mark the southern terminus of the Suez Canal, which runs north-south through Egypt from the Mediterranean Sea to the Gulf of Suez.
- The port serves vessels transporting general cargo, oil tankers, and both commercial and private passenger vessels.

India sends notice to Pakistan to amend 1960 Indus Water Treaty

Indus Waters Treaty

- It was **signed in September 1960 between India and Pakistan.**
- The treaty was **brokered by the World Bank**, which, too, is a **signatory to the treaty.**
- **Provisions**:
    - The treaty **fixed and delimited the rights** and obligations **of both countries concerning the use of the waters of the Indus River** system.
    - It **gives control over the waters of the three "eastern rivers'** -- the Beas, Ravi, and Sutlej -- **to India while control over the waters of the three "western rivers'** ' -- the Indus, Chenab, and Jhelum -- **to Pakistan**.
    - The Treaty **allows India to use the western river waters for limited irrigation use** and unlimited non-consumptive use for such applications as power generation, navigation, floating of property, fish culture, etc.
    - It lays down **detailed regulations for India in building projects over the western rivers.**
    - The Treaty **sets out a mechanism for cooperation and information exchange** between the two countries regarding their use of the rivers. It is **known as the Permanent Indus Commission,** which **has a Commissioner from each country**.

First segment of UN Intergovernmental Negotiations framework meetings now webcast: UNGA President

Intergovernmental Negotiations Framework (IGN)

- IGN is a **group of nation-states working within the UN to further reform**

the United Nations Security Council (UNSC).

- **Composition**: The IGN is **composed of several different international organisations**, namely:
    - The **African Union**;
    - The **G4 nations** (India, along with Brazil, Japan and Germany are pressing for a permanent seat in the reformed UNSC);
    - The **Uniting for Consensus Group** (UfC), also known as the "Coffee Club";
    - The **L.69 Group of Developing Countries;**
    - **The Arab League**; and
    - **The Caribbean Community** (CARICOM).
- **Each group represents a different set of positions** vis-a-vis reforming the UNSC.
- The **group's conversations are considered "informal" in nature** due to the lack of single text, and thus, UNGA rules of procedure don't apply.
- **But in 2015, a framework document was agreed** when it comes to the reform, which can be the basis for future talks.

United Nations Security Council (UNSC)

- The United Nations Charter **established six main organs of the United Nations, including the UN Security Council (UNSC).**
- UNSC has the **primary responsibility for the maintenance of international peace and security.**
- Under the UN Charter, **all Member States are obligated to comply with Council decisions.**
- The Security Council has a **permanent residence at the United Nations Headquarters in New York City.**
- **Powers:**
    - **Establishment of peacekeeping operations**.
    - Establishment of **international sanctions**.
    - **Authorisation of military action** through Security Council resolutions.
- **Members:**
    - The U.N. Charter provides for **15 members of the UNSC**:
    - **Five permanent members are known as P5**, including the United Kingdom, China, France, Russia and the US. They **have veto power over decisions of the UNSC.**
    - **10 non-permanent members. Each year** the 193-member **General Assembly elects five non-permanent members for a two-year term**

at the UNSC.

SCIENCE & TECHNOLOGY

Abaucin, the potential new antibiotic found with machine-learning

Abaucin:

- It is known to compromise the normal function of a **protein called CCR2.**
- It appears to work by disrupting lipoprotein trafficking in A. baumannii.
- Based on genetic studies, the researchers believe that abaucin could be preventing lipoprotein produced inside the bacteria from moving to the outer membrane.
- Abaucin is also "species-selective", it only disrupts the growth of A. baumannii, not other Gram-negative bacteria.

Acinetobacter baumanni

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

Researchers provide fresh information on the molecular mechanisms that stop the progression of cancer

Apoptosis:

- It is the process of **programmed cell death.**
- It is a mechanism that **allows cells to self-destruct** when stimulated by the appropriate trigger.
- **Process**:
    - It **involves condensation of the nucleus and cytoplasm**, **followed by cellular partitioning into well-defined fragments for disposal**.
    - The damaged cells are **disposed of in an orderly fashion.**
- It is **used during early development to eliminate unwanted cells**; for example, those between the fingers of a developing hand.
- **In adults, apoptosis is used to rid the body of cells that have been damaged beyond repair** and have become a threat to survival. Such cells can **include cancer cells** or **cells that are infected with bacteria or a virus.**
- Apoptosis **also removes cells that are normal but no longer needed**, such as cells that produce antibodies after the need for the antibody has passed.
- Apoptosis **can also be triggered in otherwise normal cells by external stimuli**, including **nutrient removal, toxins, hormones**, heat, and radiation.
- **Too much apoptosis** in an otherwise normal human being **will result in a**

number of so-called neurodegenerative diseases where cells die when they're not supposed to die.

- It is estimated that a **mass of cells equal to body weight is removed by apoptosis each year.**

Govt permits import of pet coke as raw material for lithium-ion batteries

Petroleum Coke:

- It is a final **carbon-rich solid material** and residual waste material **extracted from oil refining.**
- It is a spongy, solid residue from oil distillation that can be burned for fuel similar to coal.
- It is a **byproduct created when bitumen** is found in tar sands.
- Bitumen contains a higher number of carbon atoms than regular oil and it's these atoms, extracted from large hydrocarbon molecules using heat, that go on to form petcoke.
- It is **high in calorific value** and easy to transport and store.
- It releases toxic gases like **carbon dioxide, nitrous oxide, mercury, arsenic, chromium**, nickel, and hydrogen chloride after burning.
- There are two distinctive grades of Petroleum Coke viz. **Calcinable or Green Petcoke and Fuel Grade Petcoke.**
- **Application:**
    - It is widely used by **power stations** and several manufacturing industries including **cement, steel and textile plants** in India.

MeitY transfers cost-effective Li-ion battery recycling tech to 9 recycling companies, startups

Li-ion battery recycling technology :

- It is the **indigenously developed technology** that could process assorted types of discarded Li-ion batteries.
- It has the capacity of recovering more than 95 per cent Lithium (Li), Cobalt (Co), Manganese (Mn) and Nickel (Ni) contents in the form of their corresponding oxides/carbonates of about 98 per cent purity.
- The recycling **process involves leaching** followed by hierarchical selective extraction of metal values through the solvent extraction process.
- These secondary raw materials could be used for battery manufacturing or in other potential applications.
- This technology has been **developed under** the **Centre of Excellence on E-waste Management.**

Lithium

- It is a soft, **silvery-white metal** that heads group 1, the alkali metals group, of the periodic table of the elements.
- It has the **lowest density** of all metals and the **lightest of the solid elements**.
- It **reacts vigorously with water**.
- It does not occur as a metal in nature but is found combined in small amounts in igneous rocks.
- **Major Reserves:** Lithium reserves are concentrated in the **lithium triangle** in South America – **Argentina, Bolivia & Chile**, with 50% of the deposits concentrated in these regions.

Oil reserves in salt caverns: The potential in India

Salt Cavern:

- Salt caverns are developed by the **process of solution mining**, which involves pumping water into geological formations with large salt deposits to dissolve the salt.
- After the brine (water with dissolved salt) is pumped out of the formation, the space can be used to store crude oil.
- The process is **simpler, faster, and less cost-intensive** than developing excavated rock caverns.
- Salt cavern-based oil storage facilities are also **naturally well-sealed, and engineered** for rapid injection and extraction of oil.
- The salt that lines the inside of these caverns has **extremely low oil absorbency**, which creates a **natural impermeable barrier against liquid and gaseous** hydrocarbons, making the caverns apt for storage.
- **Rajasthan,** which has the bulk of requisite salt formations in India, is seen as the most conducive for developing salt cavern-based strategic storage facilities.

India's Strategic Petroleum Reserves

- India has three existing strategic oil storage facilities — **at Mangaluru and Padur** in Karnataka, and **Visakhapatnam** in Andhra Pradesh.
- These are made up of excavated rock caverns.

Government bans 14 combination drugs used to treat common ailments

Fixed-Dose Combination (FDC) Drugs:

- A FDC drug **includes two or more active pharmaceutical ingredients (APIs) combined in a single dosage form**, which is manufactured and **distributed in fixed doses.**
- They have been shown to **appreciably reduce the risk of medication non-**

adherence, which is particularly important in patients with chronic diseases.

- However, **their rationality for use should be based on sound medical principles** as there have been concerns with their irrationality and utility in several countries.
- **Common examples: Cough syrups Phensedyl and Corex, Vicks Action 500.**
- **Advantages of FDCs:**
    - **Burden of keeping track of several medications, understanding their various instructions, etc. is reduced** which improves patient compliance and therefore improves treatment outcomes.
    - The FDCs are **more economic** than single ingredient drugs.
    - The **manufacturing cost is quite low** as compared to the cost of producing separate products
    - Then there is **Simpler logistics of distribution**.
- **Disadvantages of FDCs:**
    - **If an adverse drug reaction occurs from using an FDC, it may be difficult to identify the active ingredient** responsible for causing the reaction.
    - **If the drugs combination is not appropriate, then it can lead to some patients getting too much of an ingredient and others getting too little**. FDCs "limit clinicians' ability to customize dosing regimens."

Stay alert for typhoid, malaria, states told

National Centre for Disease Control (NCDC):

- It is an **institute under the Indian Directorate General of Health Services**, **Ministry of Health and Family Welfare.**
- **The Director, an officer of the Public Health sub-cadre** of Central Health Service, is the **administrative and technical head of the Institute.**
- **History**:
    - The National Centre for Disease Control (NCDC), **formerly National Institute of Communicable Diseases (NICD) had its origin as Central Malaria Bureau,** established at Kasauli (Himachal Pradesh) **in 1909** and following expansion was **renamed in 1927 as the Malaria Survey of India.**
    - The organization was **shifted to Delhi in 1938** and **called as the Malaria Institute of India (MII).**
    - **In view of the drastic reduction achieved in** the incidence of **malaria** under National Malaria Eradication Programme (NMEP), **Government of India decided to reorganize and expand the activities of the**

institute to cover other communicable diseases.

- **Thus in 1963 the erstwhile MII was renamed as National Institute of Communicable Diseases (NICD)** to shoulder these additional responsibilities.
- **In year 2009,NICD transforms into National Centre for Disease Control (NCDC) with a larger mandate** of controlling emerging and re-emerging diseases.

- **Headquarters: New Delhi**.
- **Functions**:
  - It functions as the nodal agency in the country for **disease surveillance facilitating prevention and control of communicable diseases.**
  - In **coordination with the State Governments**, NCDC has the capacity and capability for **disease surveillance, outbreak investigation, and rapid response to contain and combat** outbreaks.
  - **It also deals with Anti-Microbial Resistance (AMR),** an emerging area of concern with far-reaching consequences.
  - It also **provides referral diagnostic support, capacity building and technical support t**o States/UTs in the country.

Integrated Management of Bakanae Disease in Basmati Rice

Foot rot disease:

- It is also known as **Bakanae Disease.**
- It is a **soil and seed-borne deadly fungus** which is seen only in the Basmati variety of paddy.
- It is caused by '**Fusarium verticillioides' fungi**.
- The infected **saplings turn pale yellow** and become elongated and later, the saplings start drying and usually die.
- Symptoms sometimes **appear after transplantation** and the **infected plants first grow way taller** than the normal plants and die after a few days.

Basmati Rice

- India is known for its Basmati rice, with the produce from seven States **— Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, Uttar Pradesh** and Uttarakhand — earmarked for **Geographical Indication.**
- It is known for its mouthfeel, aroma, and length of the grain when cooked and tasted, has a market abroad and brings about ₹30,000 crores in foreign exchange every year.

Smart bandage' with biosensors could help chronic wounds heal, study claims

- It is a soft **stretchable polymer** that helps the bandage maintain contact with and stick to the skin.
- The **bioelectronics system consists of biosensors** that monitor biomarkers in the wound exudate.
- Data collected by the bandage is **passed to a flexible printed circuit board**, which relays it wirelessly to a smartphone or tablet for review by a physician.
- A **pair of electrodes control drug** release from a hydrogel layer as well as stimulate the wound to encourage tissue regrowth.

Working

- Biosensors determine the wound status by tracking the chemical composition of the exudates, which changes as the wound heals.
- Additional **sensors monitor the pH** and temperature for real-time information about the infection and inflammation.
- A pair of electrodes, the same **electrodes that stimulate the tissue**, control the release of drugs from a hydrogel layer.
- The wireless nature of the device sidesteps the problems of existing electrical stimulation devices, which usually require bulky equipment and wired connections, limiting their clinical use.

Norovirus outbreak on celebrity ship: More than 175 down with symptoms, cruise implements rigorous measures

Norovirus

- It is a **common and very contagious virus.**
- It **causes nausea, vomiting and diarrhea.**
- It is also sometimes **referred to as the 'stomach flu'** or the ' **winter vomiting bug'**.
- **People of all ages can get infected** and sick with norovirus , which **spreads very easily** and quickly
- **You can get norovirus illness many times** in your life b**ecause there are many different types of noroviruses**.
- **Transmission**:
    - They **commonly spread through food or water that is contamin**ated during preparation or through contaminated surfaces.
    - Noroviruses **can also spread through close contact with a person** who has norovirus infection.
- **Symptoms**:
    - The **initial symptoms** of norovirus **are vomiting and/or diarrhoea**,

which show up one or two days after exposure to the virus.
    - Patients **also feel nauseous**, and suffer from **abdominal pain**, **fever**, **headaches** and body aches.
    - **In extreme cases, loss of fluids could lead to dehydration.**
- **Treatment**:
    - **No vaccines are currently available to prevent norovirus**. Treatment for the infection **focuses on relieving your symptoms.**
    - It is important to **maintain hydration in the acute phase**. **In extreme cases**, **patients have to be administered rehydration fluids** intravenously.

Bitumen used in road construction major cause of pollution

Bitumen

- It is a **dense, highly viscous, petroleum-based hydrocarbon**.
- It is **found in deposits such as oil sands and pitch lakes**(natural bitumen) or is obtained **as a residue of the distillation of crude oil**.
- **At the temperatures normally** encountered in natural deposits, **bitumen will not flow**. **In order to be moved** through a pipe, **it must be heated and, in some cases, diluted** with a lighter oil.
- Bitumen **can deform permanently under heavy loads**. Continued stress on the material can result in cracking.
- **Composition**:
    - It owes its density and viscosity to its chemical composition—**mainly large hydrocarbon molecules known as asphaltenes and resins**, which are present in lighter oils but are **highly concentrated in bitumen.**
    - In addition, bitumen frequently **has a high content of metals, such as nickel and vanadium**, and **nonmetallic inorganic elements**, such as nitrogen, oxygen, and sulfur.
- **Uses**:
    - Bitumen is known for its **waterproofing and adhesive properties** and is commonly used in **the construction industry, notably for roads and highways.**
    - It is commonly **used to waterproof boats and other marine vessels.**
    - It is also **used by companies that create and manufacture roofing products**.
    - It is **used for sealing and insulating purposes** in various building

materials such as carpet tile backing and paint.

Homo naledi, long-lost human species, buried their dead and carved cave symbols, say scientists

Homo Naledi

- Homo naledi is a **previously-unknown species of extinct hominin.**
- Fossil of Homo Naledi were **first discovered in the Dinaledi Chamber of the Rising Star Cave system in South Africa** during an expedition led by Lee Berger beginning October 2013.
- This excavation **remains the largest collection of a single hominin species** that has been found in Africa.
- **Where Lived: South Africa**
- **When Lived: 335,000 - 236,000 years ago**
- **Height: Approximately 4 ft 9 in (1.44m**
- **Weight: Estimates range from 88 – 123lbs** (39.7 – 55.8kg).
- Homo naledi **appears to have lived near the same time as early ancestors of modern humans.**
- Homo naledi **shared some similarities with humans, like walking upright and manipulating objects by hand**, but members of the species **had smaller heads**, a **shorter stature**, and were thinner and more **powerfully built.**
- Homo Naledi's **shoulders — which were oriented for better climbing** — and teeth shared similarities with earlier hominins like Australopithecus.
- They **had human-like hands and feet but a brain a third of the size of humans.**
- Anatomic features that H. naledi had in co**mmon with other members of Homo include reduced cheek teeth and similar jaws and feet.**

Defibrillators used in just one out of ten cardiac arrests

- Defibrillators are **devices that send an electric pulse or shock to the heart to restore a normal heartbeat.**
- They are used to **prevent or correct an arrhythmia**, **an uneven heartbeat** that is too slow or too fast.
- **If the heart suddenly stops, defibrillators can also help** it beat again.
- **There are three types of defibrillators: AEDs, ICDs, and WCDs**.
    - *Automated External Defibrillators (AED):*
        - An AED is a l**ightweight, battery-operated, portable device that checks the heart's rhythm and sends a shock to the**

heart to restore normal rhythm.
    - The device is used to **help people having cardiac arrest.**
- *Implantable Cardioverter Defibrillators (ICDs):*
    - ICDs are **placed through surgery in the chest or stomach area**, where the **device can check for arrhythmias**.
    - Arrhythmias **can interrupt the flow of blood from your heart to the rest of your body o**r cause your heart to stop.
    - The ICD **sends a shock to restore a normal heart rhythm**.
- *Wearable Cardioverter Defibrillators (WCDs):*
    - WCDs **have sensors that attach to the skin.**
    - They are **connected by wires to a unit that checks your heart's rhythm and delivers shocks when needed.**
    - Like an ICD, the **WCD can deliver low- and high-energy shocks**. The device has a belt **attached to a vest that is worn under your clothes.**
    - Your **provider fits the device to your size**. It is programmed to detect a specific heart rhythm.

In a first, scientists X-ray a single atom

- In a phenomenal feat, scientists have for the first time identified an element by X-raying a single atom.
- X-rays are an important way to identify the type of a material. Scientists have improved this technology through the years so that the quantity of a sample required for identification has become very small.
- The reason there's a minimum amount of material required is that an atom's response to being hit by X-rays can be very weak. The more atoms there are, the better detectors can pick up on their response.
- The team, led by Saw Wai Hla from Ohio University, used a **synchrotron X-ray** instrument developed specifically for the experiment. As samples, they used a single atom of **iron and terbium, a rare earth metal**, each.
- The study paper said that the scientists modified a conventional X-ray detector to add a sharp metal tip that would be moved to be extremely close to a sample. This is to improve the detector's ability to record any signals from the atom.
- They used a method called synchrotron X-ray scanning tunnelling microscopy or **SX-STM**.
- The atom was hit with X-ray photons. As expected, the electrons in the atom absorbed only photons of certain frequencies.
- Photons of the other frequencies passed through. Using a spectroscope, the

team determined which frequencies had been absorbed.

- This absorption spectrum is unique to each element and can be used to identify it.
- When electrons absorb the X-ray photons, they become excited and tunnel their way to the metal tip of the detector. There, a small voltage allows the electron to create an electric current, which is recorded and measured. In one version of the experiment, the scientists placed the metal tip as close as 0.5 nanometres from the atom.
- Being able to identify a material using only one atom could, according to the group, revolutionise research in material science, quantum mechanics, and other areas.
- The study also characterised the chemical states of the atoms.
- They found that as a rare earth metal, the terbium atom maintains its chemical state and is isolated while the iron atom interacts heavily with its surroundings.
- This is useful because rare earth metals find widespread application in electronic devices, and understanding their properties better could help researchers manipulate their atoms to greater precision.

Pune astronomers detect two new millisecond pulsars

Giant Metrewave Radio Telescope (GMRT):

- GMRT is a **low-frequency radio telescope** that **helps investigate various radio astrophysical problems** ranging from nearby solar systems to the edge of the observable universe.
- **Location**: It is located at **Khodad, 80 km north of Pune, Maharashtra**.
- It is a **project of the Department of Atomic Energy (DAE**), operating **under the Tata Institute of Fundamental Research (TIFR).**
- The telescope is **operated by the National Centre of Radio Astrophysics (NCRA).** NCRA is a **part of the TIFR**, Mumbai.
- It **consists of 30 fully- steerable dish-type antennas of 45-meter diameter each, spread over a 25-km region.**
- GMRT is presently the **world's largest radio telescope operating at meter wavelength**.
- It was **recently upgraded with new receivers**, after which it is **also known as the upgraded Giant Metrewave Radio Telescope (uGMRT).**

Pulsars

- Pulsars are **rotating neutron stars** observed to **have pulses of radiation at very regular intervals** that typically range from milliseconds to seconds.
- Pulsars **have very strong magnetic fields** which **funnel jets of particles out**

along the two magnetic poles.

- **These accelerated particles produce very powerful beams of light.**
- **Often, the magnetic field is not aligned with the spin axis**, so those beams of particles and **light are swept around as the star rotates**.
- Pulsars are among the **few celestial objects that emit circular polarised light.**

Union Cabinet approves continuation of Central Sector Scheme of 'Exploration of Coal and Lignite Scheme'

Exploration of Coal and Lignite Scheme

- The period for the extension is from **2021-22 to 2025-26**.
- Under this scheme, exploration for coal and lignite is conducted in two broad stages: (i) Promotional (Regional) Exploration and (ii) Detailed Exploration in non-Coal India Limited blocks.
- **Benefits of the scheme**
    - This scheme is required to **prove and estimate coal resources** available in the country, which helps in preparing detailed project reports to start coal mining.
    - The geological reports prepared through these explorations are used for **auctioning new coal blocks,** and the cost is thereafter recovered from successful allocatee.

Types of Coal

- **Anthracite:** It contains the **highest amount of carbon out of all coal ranks** (86%-97%) and it is used mostly in industrial settings and the metals industry due to its high heat value.
- **Lignite:** it is lighter in colour than the higher ranks of coal. It has the lowest carbon content out of all the coal ranks (25%-35%) and it has a high moisture content and crumbly texture.
- **Bituminous:** It has **slightly lower carbon content** than anthracite (45%-86%)1. The wide range of carbon content in bituminous coal warrants uses for both electricity and steel production.
- **Peat:** It is the starting stage of a coal formation which has low calorific value and low carbon content.

EU approves its first vaccine for common respiratory virus RSV

- The shot, called **Arexvy,** is made by British drugmaker GSK and is designed to protect people aged 60 and over.

Respiratory syncytial virus

- It is a **common respiratory virus** that usually causes mild, cold-like symptoms.
- It seriously infects **infants and older adults.**
- It is the most **common cause of bronchiolitis** (inflammation of the small airways in the lung) and pneumonia in children younger than 1 year of age in the United States.
- The **complex molecular structure** of the virus and safety concerns with previous vaccine attempts had stymied efforts to successfully develop a shot.

Virus

- A virus is an infectious microbe consisting of a **segment of nucleic acid** (either DNA or RNA) surrounded by a protein coat.
- It **cannot replicate alone**; instead, it must infect cells and use components of the host cell to make copies of itself.

NPPA expands price control to 23 additional drugs

National Pharmaceutical Pricing Authority

- It was established **to fix and revise the prices of controlled bulk drugs**, and formulations and to enforce prices and availability of the medicines in the country, under the Drugs (Prices Control) Order, 1995.
- **Nodal Ministry:** It is an attached office of **the Department of Pharmaceuticals** (DoP), **Ministry of Chemicals and Fertilisers.**
- It is an independent Regulator for pricing of drugs and to ensure availability and **accessibility of medicines at affordable prices.**
- **Functions**
    - To implement and enforce the provisions of the Drugs (Prices Control) Order in accordance with the powers delegated to it.
    - To deal **with all legal matters arising out** of the decisions of the Authority.
    - To monitor the availability of drugs, identify shortages, if any, and to take remedial steps
    - To collect/ maintain **data on production, exports and imports**, market share of individual companies, profitability of companies etc, for bulk drugs and formulations
    - To undertake and/ or **sponsor relevant studies** in respect of pricing of drugs/ pharmaceuticals
    - To recruit/ appoint **the officers and other staff members of the Authority**, as per rules and procedures laid down by the Government
    - To render advice to the Central Government on changes/ revisions in

the drug policy
- To render assistance to the Central Government in the parliamentary matters relating to the drug pricing.

India logged 31 million new diabetes patients in 2019-21

Diabetes

- It is a chronic disease that occurs either **when the pancreas does not produce enough insulin** or when the body cannot effectively use the insulin it produces.
- **Insulin is a hormone** that regulates blood glucose.
- It is a **Non-Communicable Disease** (NCD).
- **Types of Diabetes**
  - **Type 1 Diabetes:** It is thought to be **caused by an autoimmune reaction** (the body attacks itself by mistake). This reaction stops your body from making insulin.
  - It's usually diagnosed in children, teens, and young adults.
  - **Type 2 Diabetes:** In this condition the human **body doesn't use insulin well** and can't keep blood sugar at normal levels. It develops over many years and is usually diagnosed in adults (but more and more in children, teens, and young adults).
  - **Gestational Diabetes:** It develops **in pregnant women** who have never had diabetes.
  - **Prediabetes:** With prediabetes, blood sugar levels are higher than normal, but not high enough for a type 2 diabetes diagnosis.

An eco-friendly answer to diesel engine roars to life

Dimethyl Ether

- It is a **synthetically produced alternative to diesel** for use in specially designed compression ignition diesel engines.
- It can be produced indigenously, and several countries, like Japan, USA, China, Sweden, Denmark, and Korea, are already using DME to power their vehicles.
- The DME-fuelled **engine emitted extremely low particulate and soot emissions** and almost no smoke without using expensive exhaust gas after-treatment devices and advanced engine technologies.
- It **can be a viable alternative fuel and engine technology** to adapt to conventional diesel engines used in India's economy's agricultural and transport sectors.

Properties of Dimethyl Ether

- It **has a very high cetane number**, which is a measure of the fuel's ignitibility in compression ignition engines.
- Under normal atmospheric conditions, **DME is a colorless gas.**

Application of Dimethyl Ether

- It is used extensively in the **chemical industry and as an aerosol propellant.**
- It is used in chemical industries and also to produce dyes and plastics.

Scientists discover 'lost world' of early anc

Protosterol Biota

- It is the **microscopic organism**, belongs to the family of organisms called **eukaryotes.**
- These are discovered inside a rock at the bottom of **the ocean near what** is now the **Northern Territory in Australia.**
- They have a complex structure combining mitochondria.

eukaryotes

- These cells possess a **clearly defined nucleus.**
- These cells **have anuclear membrane** that surrounds the nucleus, in which the well-defined chromosomes (bodies containing the hereditary material) are located.
- These cells also contain **organelles**, including mitochondria (cellular energy exchangers), a Golgi apparatus (secretory device), an **endoplasmic reticulum**(a canal-like system of membranes within the cell), **and lysosomes** (digestive apparatus within many cell types).
- These are thought to have evolved between about 1.7 billion and 1.9 billion years ago.

CACP recommends Centre to bring urea under NBS Regime

Nutrient Based Subsidy scheme

- It is being implemented **in 2010 by the Department of Fertilizers, Ministry of Chemicals & Fertilizers.**
- A fixed amount of **subsidy decided on annual basis**, is provided on each grade of subsidized Phosphatic & Potassic (P&K) fertilizers depending on its Nutrient Content.
- In case of phosphate (P) and potassic (K)fertilisers, subsidy is fixed under this scheme by an inter-ministerial committee taking into account the benchmark international prices of finished fertilisers as well as raw materials.
- The subsidy is **given to registered to P&K fertiliser manufacturers/importers** which provides these fertilisers at subsidised rates

to farmers.

- **Benefits of the scheme**
    - It helps farmers in ensuring availability of essential nutrients at subsidized prices.
    - It rationalizes the subsidy on P&K fertilizers, ensuring effective and efficient utilization of government resources.

Captagon gives Syria's Assad a leverage over Arab states

Captagon pill

- It is a highly **addictive amphetamine-type drug**, which is produced mainly in Syria.
- The original Captagon **contained fenetylline,** a synthetic drug of the phenethylamine family to which amphetamine also belongs.
- It was commercially sold in several countries until the 1980s and was banned due to **fears of its highly addictive nature.**

What do amphetamine-based drugs do

- It **stimulates the central nervous system**, providing a boost of energy, enhance someone's focus, let someone stay awake for longer periods of time, and produce a feeling of euphoria.
- These type drugs usually stay in the blood for around 36 hours.
- When taken orally, their peak effect occurs one to three hours after consumption, and effects last for as long as seven to 12 hours.

Side effects

- They can cause **loss of appetite and weight, heart problems** such as fast heart rate, irregular heartbeat, increased blood pressure, and heart attack, which can lead to death.
- They can also **cause high body temperature**, skin flushing, memory loss, problems thinking clearly, and stroke.

Taurine is a key to longer, healthier life: Research

Taurine

- It is a **naturally occurring sulfur-containing amino acid.**
- It's particularly **concentrated in your brain, eyes, heart, and muscles**.
- **Sources**: Taurine **occurs naturally in foods with protein, such as meat or fish.**
- **Functions**:
    - The human body uses taurine **for actions in cells.** One example is that

taurine is used for energy production.

- Taurine also **helps the body process bile acid and balance fluids, salts and minerals,** among other actions.
- It has **important functions in the heart and brain. It helps support nerve growth.**
- It might also **benefit people with heart failure by lowering blood pressure and calming the nervous system.**
- It is also **used for obesity, athletic performance, fatigue, diabetes, and many other conditions.**

Amino Acids

- An amino acid is the **fundamental molecule that serves as the building block for proteins.**
- There are **20 different amino acids.**
- **A protein consists of one or more chains of amino acids** (called polypeptides) whose sequence is encoded in a gene.
- **Some amino acids can be synthesized in the body, but others** (essential amino acids) cannot and **must be obtained from a person's diet.**

New Study Reveals How Much Neanderthal DNA Still Exists In Modern Humans

Neanderthals

- Neanderthals are our **closest extinct human relative.**
- **Species: Homo neanderthalensis**
- They **lived throughout Europe and parts of Asia** from about **400,000 until about 40,000 years ago**.
- Neanderthals **co-existed with modern humans for long periods** of time before eventually becoming extinct.
- **Features**:
  - Some defining features of their **skulls include the large middle part of the face**, **angled cheek bones, and a huge nose** for humidifying and warming cold, dry air.
  - Their **bodies were shorter and stockier than modern humans**, another **adaptation to living in cold environments**.
  - But their **brains were just as large as modern humans and often larger** proportional to their brawnier bodies.
  - Their bones reveal that they were **extremely muscular and strong**, but **led hard lives,** suffering frequent injuries.
  - Neanderthals **made and used a diverse set of sophisticated tools**,

controlled fire, lived in shelters, **made and wore clothing**, were s**killed hunters of large animals** and **also ate plant foods**, and occasionally **made symbolic or ornamental objects.**

- Fossil evidence suggests that Neanderthals, like early humans, **made an assortment of sophisticated tools from stone and bones.** These included small blades, hand axe and scrapers used to remove flesh and fat from animal skin.
- There is evidence that Neanderthals **deliberately buried their dead and occasionally even marked their graves** with offerings, such as flowers.

Older people exhale more aerosol particles, says study

- Scientists have reported that healthy people emit exponentially more aerosol particles from their lungs as they age, both at rest and during exercise.
- An aerosol consists of very fine solid or liquid particles suspended in a fluid. Air that contains PM2.5 particulate matter can be considered an aerosol.
- The team found that older people, aged 60-70 years, emitted twice as many aerosol particles and five-times as much dry volume i.e., the volume of dried aerosol particles, as those aged 20-39, both at rest and during exercise.
- They also found that a small fraction of air that they had sampled had a higher concentration of aerosol particles from both old and young people at rest than when they were exercising.
- During exercise, both older and younger people had particles of size 0.4 micrometre, but the older people also had a significant number of particles larger than 0.4 micrometre.
- In the early days of the COVID-19 pandemic, there was considerable debate over whether aerosols helped the virus move through the air. The new findings suggest disease-transmission models may have to account differently for younger and older people.
- Higher aerosol emissions by older people could potentially correlate with a higher infection risk for others when an older infected person is present compared to a younger infected person

The status of transgenic crops in India

Three States, Gujarat, Maharashtra and Telangana, have deferred a proposal, approved by the Centre's Genetic Engineering Appraisal Committee (GEAC), to test a new kind of transgenic cotton seed that contains a gene, **Cry2Ai**, that purportedly makes cotton resistant to pink bollworm, a major pest.

Status of transgenic crops in India

- There are an array of crops — brinjal, tomato, maize, chickpea — in various stages of trials that employ transgenic technology. However, cotton remains the only transgenic crop that is being commercially cultivated in India.
- After a long hiatus, the GEAC, the apex technical body charged with evaluating proposals for testing genetically modified (GM) seeds, approved the environmental release of Mustard hybrid **DMH-11** and its parental lines, during its 147th meeting on 18 October, 2022 for seed production and testing. This is one step away from full commercial cultivation.
- However, the GEAC, which is under the Union **Environment Ministry**, isn't the final arbiter in the case of GM crops. There is a long-standing litigation in the Supreme Court on the permissibility of allowing transgenic food crops in farmer fields based on petitions filed by an NGO. Following the GEAC approval for DMH-11, the petitioners approached the apex court asking for a stay on the release of the crop because it would encourage farmers to spray herbicides, which are banned in India. Hearings on this case are still ongoing.
- In 2017, the GEAC had accorded a clearance for GM mustard, but went back on its decision and imposed additional tests. In 2010, the GEAC had approved GM brinjal, but this was put on an "indefinite moratorium" by the United Progressive Alliance government.

What is the process of regulating transgenic crops in India?

- A transgenic plant can apply for commercial clearance, only after it has proven to be demonstrably better than comparable non-GM variants on claimed parameters (for instance, drought tolerance or insect resistance) without posing ecological harm to other species that may be being cultivated in the vicinity. Open field trials often take place over multiple crop seasons, and types of geographical conditions, to assess its suitability across different States.

The cotton seed has been developed by the Hyderabad-based Bioseed Research India with Cry2Ai which makes it resistant to pink bollworm. The first generations of transgenic cotton had been developed to inure cotton against a more widespread pest called **American bollworm**.

DCGI approves first indigenously developed animal-derived Class D biomedical device that meets all statutory requirements

Cholederm

- It is a **wound healing material derived** from the extracellular matrix of the de-cellularised **gall bladder of pigs and tissue engineered** as membrane forms of a scaffold.
- It healed **different types of skin wounds** including burn and diabetic wounds in rats, rabbits or dogs etc. faster than similar products currently available in

the market

- It is the **first indigenously developed product** to meet all regulatory requirements.
- The **scaffold modulated** the scarring reactions in subcutaneous, skeletal-muscle and cardiac tissues.

CDSCO

- It is the Central Drug Authority for discharging functions assigned to the Central Government under **the Drugs and Cosmetics Act of 1940.**
- It works under **the Ministry of Health & Family Welfare**.
- Under the Drugs and Cosmetics Act, **CDSCO is responsible for** -
    - Approval of Drugs.
    - Conduct Clinical Trials.
    - Laying down the standards for Drugs.
    - Control over the quality of imported Drugs in the country.
    - Along with state regulators, it is jointly responsible for the grant of licences to certain specialised categories of critical Drugs such as vaccines and sera, etc.
- **Drugs Controller General of India (DCGI):** DCGI is the head of the department of the CDSCO of the Government of India responsible for approval of licences of specified categories of drugs such as blood and blood products, IV fluids, vaccines and sera in India.
- DCGI also **sets standards for the manufacturing**, sales, **import**, and distribution of drugs in India.

Leptospirosis, a disease that surges in the monsoon months

Leptospirosis

- It is a potentially fatal **zoonotic bacterial disease.**
- The disease is caused by a bacterium called **Leptospira interrogans, or Leptospira.**
- It is more **prevalent in warm, humid countries** and both urban and rural areas.
- It is a **contagious disease** in animals but is **occasionally transmitted to humans** in certain environmental conditions.
- The carriers of the disease can be **either wild or domestic animals**, including rodents, cattle, pigs, and dogs.
- The cycle of disease transmission begins with the shedding of Leptospira, usually in **the urine of infected animals.**

- According to the U.S. Centres for Disease Control and Prevention, infected animals can continue to excrete the bacteria into their surroundings for a few months, but sometimes up to several years.
- **Leptospirosis may occur in two phases:**
    - After the first phase (symptoms: fever, chills, headache, muscle aches, vomiting, or diarrhoea) the patient may recover for a time but become ill again.
    - If a second phase occurs, it is more severe; the person may have kidney or liver failure or meningitis.
- It can be **treated with antibiotics.**

Human Brain's Cerebellum Affected More Than Other Regions From Covid, Study Finds

Cerebellum

- The cerebellum, which stands for **"little brain"**, is a **structure of the central nervous system.**
- **Location**: It is a **part of your brain located at the back of your head**, just **above and behind, where your spinal cord connects to your brain** itself.
- It only accounts for around**10% of total brain weight but contains** as many as **80% of all neurons** in the brain.
- **Functions**:
    - **Maintaining balance:** The cerebellum has special sensors that **detect shifts in balance and movement.** It **sends signals for the body to adjust** and move.
    - **Coordinating movement:** Most body movements require the coordination of multiple muscle groups. The **cerebellum times muscle actions so that the body can move smoothly.**
    - **Vision**: The cerebellum **coordinates eye movements.**
    - **Motor learning:** The cerebellum h**elps the body to learn movements that require practice and fine-tuning.** For example, the cerebellum plays a role in learning to ride a bicycle or play a musical instrument.
    - **Other functions**: Researchers believe the cerebellum has **some role in thinking, including processing language and mood**.

Cerebrum

- Cerebrum is the **largest part of your brain** and **includes parts above and forward of the cerebellum.**
- It **receives and gives meaning to information from the sense organs** and **controls the body.**

- It is also essential for **memory, reasoning, communication, emotions**, and many other functions.
- The **cerebellum and brainstem sit below the cerebrum** and work alongside it to control the voluntary actions in the body.

VAIBHAV new fellowship programme launched to connect Indian STEMM, R&D institutions

- The fellowship would be awarded to **outstanding scientists/technologists** of Indian **origin (NRI/OCI/PIO)** who are engaged in research activities in their respective countries.
- The VAIBHAV Fellow would identify an Indian Institution for collaboration and may spend up to **two months in a year for a maximum of 3 years.**
- **Funding:** The government offers the researchers an **amount of INR 4,00,000 per month** for the entire period.
- **Aim:** Improving the **research ecosystem** of India's **Higher Educational Institutions** by facilitating academic and research collaborations between Indian Institutions and the best institutions in the world.
- This is done through the mobility of faculty/researchers from overseas institutions to India.
- **Eligibility:** Researchers from institutions featuring in the top 500 QS World University Rankings will be eligible for the fellowship.
- The applicant must have obtained Ph.D./M.D/M.S degree from a recognized University.
- The **75 selected fellows** would be invited to work in **18 identified knowledge verticals** including quantum technology, health, pharma, electronics, agriculture, energy, computer sciences, and material sciences amongst others.
- It is **implemented by** the Department of Science and Technology (DST), **Ministry of Science and Technology.**

Pune's IUCAA team develops space telescope to capture ultraviolet imaging of Sun

Solar Ultraviolet Imaging Telescope (SUIT)

- The telescope is one of the seven payloads on Aditya-L1.
- **Features**
    - It is unique because it will **provide full disk images of the sun** in **2000 to 4000 A wavelength range** which has never been obtained.
    - It will allow us to record images in this wavelength crucial for maintaining the **Ozone and Oxygen content** in the atmosphere of the

Earth.
    - It will also measure **the UV radiation hazardous** for skin cancer.
    - It will address fundamental questions such as the existence of a higher-temperature atmosphere above the cooler surface of the Sun and the origin and **variation of near-ultraviolet radiation** and high-energy solar flares.
    - It will help in the measurement of **solar radiation from Hard X-ray to Infrared**, as well as in-situ **measurements of particles in the solar wind**, including the Sun's magnetic field at the L1 point.
- It is expected to last **five years**.
- **Funding:** ISRO funded the initial Rs 25 crore required for the hardware, a small portion of the overall project.

Aditya-L1 Mission

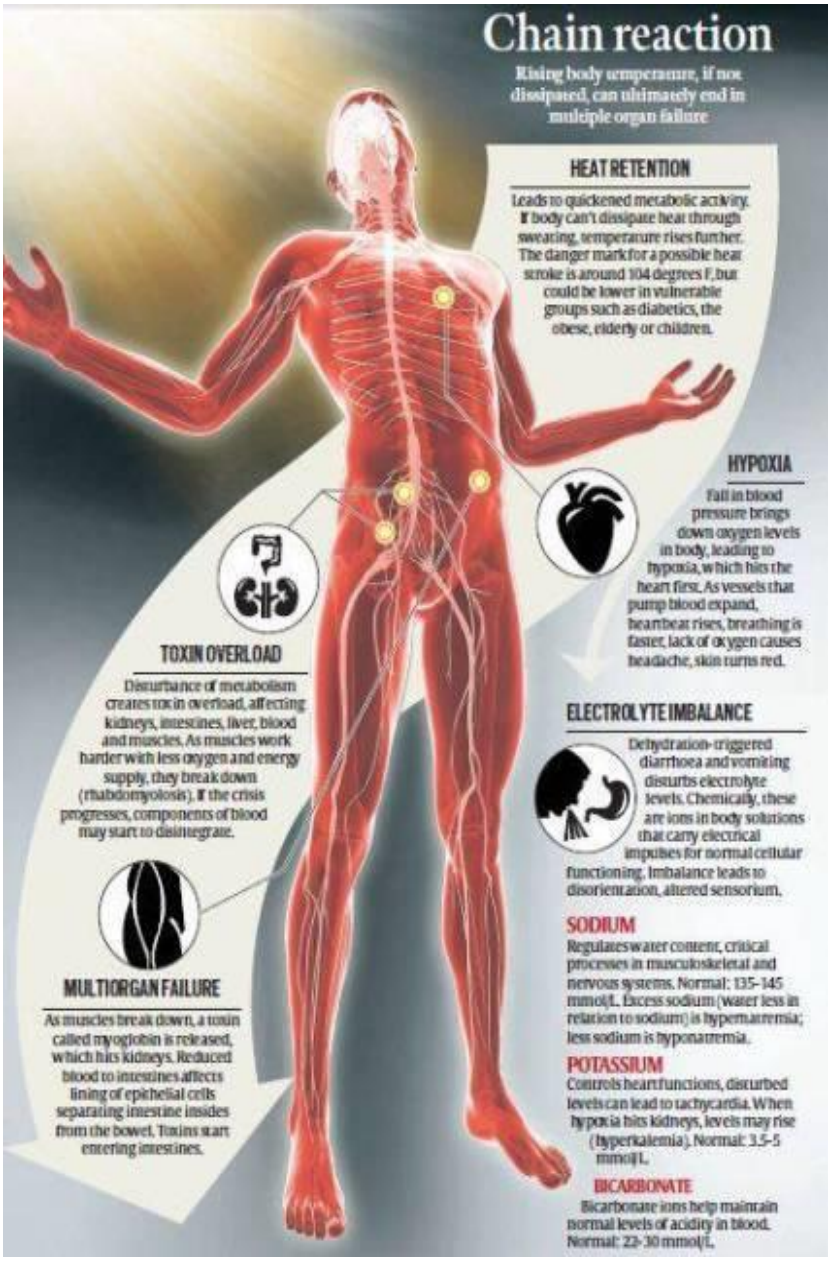
- It is India's first dedicated scientific **mission to study the Sun.**
- The spacecraft will be **placed** in a halo orbit around the **first Lagrange point, L1,** which is 1.5 million km from the Earth towards the Sun.
- A satellite around the L1 point has the major advantage of continuously viewing the Sun without occultation/eclipses.
- Aditya-L1 carries seven payloads to observe the **photosphere, chromosphere, and the outermost layers of the Sun** (the corona) using electromagnetic and particle detectors.
- The satellite will be launched **by a PSLV-XL launch vehicle** from Sriharikota.

68 dead in Ballia amid heatwave: How high temperatures combined with high humidity can be fatal

At least 68 people admitted to a district hospital in Uttar Pradesh's Ballia are suspected to have died between June 15 and 18 due to scorching heatwave conditions, with temperatures soaring up to 43.5 degree Celsius in the region.

Why do heatwaves cause deaths?

- High temperatures alone aren't fatal in nature. It's when high temperatures are combined with high humidity, known as the **wet bulb temperature**, heatwaves become lethal. Although the city wasn't experiencing heatwave conditions — the maximum temperatures were in the range between 30 and 35 degree Celsius — experts said high humidity levels at the venue could have been one of the reasons behind the unusual death toll.



- The deaths in Ballia might have happened due to a similar reason. As per IMD, the relative humidity in the city on June 18 was 31 per cent and the maximum temperature reached 43.5 degrees Celsius. This means that the Heat Index (HI), or "real feel" temperature, touched 51 degree Celsius according to the calculations of the National Oceanic and Atmospheric Administration's (NOAA) HI calculator. Such conditions could severely impact human bodies, sometimes leading to death.

How can high temperatures and high humidity impact humans?

- Experts suggest that high temperatures along with high humidity are

dangerous for a reason.

- Humans lose heat generated within their bodies by producing sweat that evaporates on the skin. The cooling effect of this evaporation is essential in maintaining a stable body temperature.
- As humidity rises, sweat does not evaporate —just like clothes take a long time to dry in humid locations – and makes it difficult to regulate body temperature. And this could cause a heat stroke, which takes place only when the body temperature goes above 40 degrees Celsius.

- What happens is that excessive heat increases metabolic activity in the body, leading to a drop in blood pressure and oxygen levels with increased sweating — this is a condition called **hypoxia**.

The remarkable endurance of the Y chromosome, 'master of maleness'

- Researchers have discovered that **the Y chromosome possesses genes** that are vital to biological functions, including those linked **to ageing and lifespan regulation.**
- Genome sequences of the Neanderthals, an ancient relative of the modern human, harbour telltale signs of the replacement of the Y chromosome beginning from modern humans.
- The Y chromosome may have to relinquish its title of "**master of maleness"** to another chromosome in the times to come.

Chromosome

- It is a **thread-like structure** located inside the **nucleus of animal and plant cells.**
- Each chromosome is **made of protein** and a single molecule of deoxyribonucleic acid (DNA).
- It is passed from parents to offspring.
- DNA contains the specific instructions that make each type of living creature unique.
- In humans, in addition to the 22 pairs of chromosomes in each, we have a pair of sex chromosomes called X and Y.
- All biological **males have X and Y** chromosomes and all biological **females have two X** chromosomes.
- The y chromosome known as the "master of maleness," determines the biological male sex and carries genes that play a role in sex determination.

First Omicron-specific mRNA vaccine from India approved by regulators.

GEMCOVAC –OM Vaccine

- It was developed using the indigenous platform technology by Gennova Biopharmaceuticals Ltd. and supported under **the Mission COVID Suraksha,** implemented by Biotechnology Industry Research Assistance Council (BIRAC).
- It is a thermo-stable vaccine, which **does not require ultra-cold chain infrastructure** used for other approved mRNA-based vaccines, making it easy for deployment pan India.
- It is **delivered intra-dermally using a needle-free injection** device system.
- When administered intradermally in participants as a booster, it generated significantly **higher immune responses.**
- The clinical outcome demonstrates the need for variant-specific vaccines for desired immune response.

BIRAC

- It is a **not-for-profit Section 8, Schedule B, Public Sector Enterprise**, set up by the Department of Biotechnology (DBT), Government of India,
- It is an Interface Agency to strengthen and empower emerging Biotech enterprises to undertake strategic research and innovation, addressing nationally relevant product development needs.

mRNA vaccine

- It contains messenger **RNA (mRNA),** a single-stranded RNA molecule that complements DNA.
- It is created in the nucleus when DNA is transcribed by RNA polymerase to create pre-mRNA.

Evidence of the amino acid tryptophan found in space

- High amounts of tryptophan were detected in the Perseus Molecular Complex, specifically in the IC348 star system, a star-forming region that lies 1000 light years away from Earth - relatively close in astronomical terms.
- Tryptophan is one of the 20 amino acids essential for the formation of key proteins for life on Earth, and produces one of the richest pattern of spectral lines in the infrared. It was therefore an obvious candidate to be explored using the extensive spectroscopic database of the Spitzer satellite, a space-based infrared telescope.
- Amino acids are commonly found in meteorites and were present during the formation of our Solar System. This new work could indicate that these protein-building agents - that are key to the development of life - exist naturally in the regions where stars and planetary systems form, and may contribute to the early chemistry of planetary systems around other stars.

Tryptophan

- It is an **amino acid needed for normal growth in infants** and for the **production and maintenance of the body's proteins,** muscles, enzymes, and neurotransmitters.
- It is an **essential amino acid**. This means your **body cannot produce it**, so you must get it from your diet.
- **Functions**:
    - The body **uses tryptophan to help make melatonin and serotonin**.
    - Melatonin **helps regulate the sleep-wake cycle**, and **serotonin is thought to help regulate appetite, sleep, mood, and pain.**
    - The **liver can also use tryptophan to produce niacin (vitamin B3**), which is needed for energy metabolism and DNA production.
    - Tryptophan has been **used in alternative medicine as a possibly effective aid in treating symptoms of premenstrual dysphoric disorder syndrome** (such as mood swings and irritability), and to help people quit smoking.

IC 348

- It is a **2-million-year-old open star cluster** surrounded by a reflection nebula of about **15 light-years across.**
- It is **located 1028 light-years away from earth** in the northern **constellation of Perseus,** while it is receding from earth at 14km per second.
- It is **embedded in the star-forming region called the Perseus molecular cloud**.

Scientists from Gujarat institute develop biodegradable paper supercapacitor from seaweed

Biodegradable Supercapacitor

- A supercapacitor is an **electrochemical charge storage device** with a fast charging/discharging cycle, **high power density and a longer lifecycle.**
- **Features**
    - This supercapacitor which can fully charge a device within 10 seconds, has been **developed from seaweed** (marine macroalgae).
    - The device is of **high tensile strength and performance**, as well as cost-effective, according to the researchers.
    - The product **can be used in electronics, memory backup systems**, airbags, heavy machines, electric vehicles, etc.; hence, it holds a huge business prospect.

Seaweed

- Seaweeds are **macroalgae attached** to rock or other substrata and are found in coastal areas.
- They are classified as **Chlorophyta**(green), **Rhodophyta** (red) and **Phaeophyta** (brown) based on their pigmentation.
- Among them, Chlorophyta holds more potential components like carbohydrates, lipids, proteins and bioactive compounds in the cell wall.
- Green seaweed has a high amount of a particular type of cellulose in its cell wall.

Deadly pink bollworm creeps into Bathinda, Mansa fields

Pink Bollworm

- It is one of the **most destructive pests of cotton**.
- **Scientific name: Pectinophora gossypiella**
- **Distribution**: Originally **native to India**, it is now **recorded in nearly all the cotton-growing countries of the world.**
- **Description**:
    - The **adults are small moths about 3/8 inch long and are dark brown** with markings on the fore wing.
    - The **larval stage is the destructive** and identifiable stage.
    - The **larvae have distinctive pink bands and can reach a length of ½ inches** right before they pupate.
- **Ecological Threat:**
    - Pink bollworms are **major pests of cotton.**
    - **Adults only last for 2 weeks, but females will lay 200 or more eggs.**
    - **Adults lay eggs on cotton bolls**; once hatched, the **larvae eat the seeds and damage the fibres of the cotton**, reducing the yield and quality.
    - **When the larvae mature, they cut out the boll** and drop to the ground and cocoon near the soil surface.
    - It has also been observed to **attack hibiscus, okra, and hollyhock plants**.

What is the chiral bose-liquid state?

- Usually matter exists in **solid, liquid or gas forms.**
- At temperatures approaching absolute zero, or the world within the atom, things are very different.
- In these "quantum" states, matter behaves in ways quite different from the

solid, liquid, and gaseous states.

- Under frustrated quantum systems, where infinite possibilities result from the interaction of particles.

Formation

- Researchers used **a bi-layer semiconducting device.**
- The top **layer is electron-rich**, and these electrons can move freely.
- The bottom layer is **filled with "holes,"** or places that a roving electron can occupy.
- Then the two layers are brought extremely close together. The machine is then triggered to create a local imbalance resulting in electrons not having enough holes to fill and this kicks off the novel state called the chiral Bose-liquid state.
- In this state, **electrons can be frozen into predictable patterns**, making them resilient to changes in spin (a defining characteristic of subatomic particles) and even have electrons synchronise their movements.
- It is very difficult to create such states of matter but going ahead may be used to fashion novel digital encryption systems.

Chiral

- The term chiral is from the Greek word for 'hand' which refers to anything which **cannot be superimposed on its own mirror image.**

Crystal that melts under UV light

- Researchers have discovered a novel material that transitions from a crystal to a liquid and exhibits changes in luminescence when irradiated with UV light, enabling a molecular-level visualisation of the crystal-melting process.
- The finding is unprecedented as the melting is induced by light alone. More intriguing, it changes colour as it melts. This new class of photo-responsive crystal compounds are called "**heteroaromatic 1,2-diketones**" and the phenomenon ***photo-induced crystal-to-liquid transition (PCLT).***
- The colour changes indicate that the material underwent molecular-level changes in shape, which caused variations in light absorption and emission. The work provides insights into the mechanism of crystal melting and will enable greater opportunities for the design of PCLT materials with a variety of applications.

Why do Humans getting older?

As we age, many of the systems in our bodies begin to deteriorate: Our vision gets worse, our joints weaker, and our skin thinner. The older we get, the more likely we are to become ill, break bones and — eventually — die.

Natural selection gets weaker as organisms age

This means that whatever happens after you reproduce has little effect on how well you pass on your genes to the next generation, which is key to understanding evolution. Whether you are in a good or bad state when you get old doesn't really matter, because you won't be able to produce offspring.

Humans in the past, and most organisms that live in the wild, typically don't reach old age because of the dangerous environments they grow up in.

Accumulating mutations

- If you inherit a dangerous mutation that will cause negative effects as you age. Although you most likely wouldn't live long enough to experience those bad effects, the mutation would remain in your genome, so you would still be able to pass it on to your offspring.
- This is happening all the time. Over generations, many mutations that make old age worse are accumulating in our genomes. **Huntington's disease** is thought to be an example of this accumulation of negative mutations. This deadly disease has an onset age of around 35 years.
- There is also evidence that natural selection can favour some mutations that can have a positive effect at an early age but negative effects when you get older. An example of this includes mutations in the **BRCA1/2 gene** that increase a woman's fertility — and the risk of women developing breast and ovarian cancer.

Why do some organisms live longer than others?

- Aging is a very diverse process. Some organisms simply don't seem to get old at all. Hydras are freshwater polyps, related to jellyfish and corals, that never seem to age and are potentially immortal.
- There are also many plants that don't show any signs of aging, and some trees, like the Great Basin bristlecone pine, that can live for thousands of years. One of these pines, named Methuselah, is almost 5,000 years old.
- Another fascinating example is the **Greenland shark**. It reaches sexual maturity at age 150 and can live up to 400 years, giving it the longest lifespan of all vertebrates. On the contrary, and perhaps to the delight of many, a female mosquito — the kind that bite you in your sleep — only lives about 50 days.
- For different organisms, environmental pressures might have favoured faster maturity and reproduction and shorter lifespan, while others favoured the contrary.
- Animals that have a high risk of dying normally have a short lifespan, which of course makes sense, because if you have a very high risk to die anyway, you don't need to invest in living very long

Scientists now one step closer to identifying the source of solar mean magnetic field: Indian Institute of Astrophysics study

- According to the Department of Science and Technology, scientists are now one step closer to identifying the **source of the Solar Mean Magnetic Field** (SMMF).

Solar Mean Magnetic Field

- It is the **mean value of the line-of-sight** (LOS) component of the solar vector magnetic field **averaged over the visible hemisphere** as well as its relationship with **Interplanetary Magnetic Field** (IMF).
- The sun contains **the corona** (the outer shell of the sun's atmosphere), the **photosphere** (the visible surface), and the **chromosphere** (near-transparent layer, just above the photosphere) with the **magnetic field** generated by electrical currents acting as a magnetic dynamo inside the sun.
- However, so far, the studies on the SMMF have **mostly been confined to** the magnetic field measurements **at the photosphere.**
- **New Findings:**
    - Scientists, in their quest to understand if and how the SMMF at chromospheric heights is related to the SMMF at photospheric heights, have found a very good similarity between the two.
    - The value of chromospheric SMMF is lower than the photospheric SMMF, thereby suggesting that **the primordial magnetic field inside the sun could be a source of the SMMF.**
    - They calculated and analysed the SMMF using magnetic field measurements at the chromosphere in conjunction with that of photospheric measurements.
    - These electrical currents are generated by the flow of hot, ionised gases in the sun's convection zone.

LiDAR Market Size, Share & Growth Report, 2022 - 2030

LiDAR

- LiDAR, which stands for **Light Detection and Ranging**, is a **remote sensing method** that **uses light** in the form of a pulsed laser **to measure ranges (variable distances) to the Earth.**
- These **light pulses—combined with other data recorded by the airborne system — generate precise, three-dimensional information about the shape of the Earth** and its surface characteristics.
- There are three **primary components** of a LiDAR instrument — **the scanner, laser and GPS receiver.**

- **Aeroplanes and helicopters are the most commonly used platforms** for acquiring lidar data over broad areas.
- **Two types of lidar are**,
    - **Topographic lidar:** It typically uses a near-infrared laser to **map the land.**
    - **Bathymetric lidar:** It uses water-penetrating green light to also **measure seafloor and riverbed elevations.**
- **How does LiDAR work?**
    - A LiDAR system **measures the time it takes for emitted light to travel to the ground and back.**
    - That time is **used to calculate the distance travelled**.
    - Distance travelled is **then converted to elevation**.
- **Applications:**
    - Lidar systems allow scientists and mapping professionals **to examine both natural and manmade environments** with accuracy, precision, and flexibility.
    - It is used to **produce more accurate shoreline maps**, **make digital elevation models** for use in geographic information systems, assist in emergency response operations, and in many other applications.

Remote Sensing

- Remote sensing is the **science of obtaining information about objects** or areas **from a distance, typically from aircraft or satellites.**
- Remote sensors **can be either passive or active.**
    - **Passive sensors respond to external stimuli**. They **record natural energy that is reflected or emitted** from the Earth's surface. The **most common source of radiation** detected by passive sensors **is reflected sunlight**.
    - **Active sensors use internal stimuli to collect data about Earth.** For example, a laser-beam remote sensing system projects a laser onto the surface of the Earth and measures the time that it takes for the laser to reflect back to its sensor.

When did humans first arrive in Southeast Asia?

- It revealed that **humans were present** in the vicinity of Tam Pà Ling Cave for roughly 56,000 years.
- It also confirmed that, far from reflecting a rapid dump of sediments, the site contains sediments that accumulated steadily over some 86,000 years.
- The age of the lowest fossil, a fragment of a leg bone found seven metres deep,

suggests modern **humans arrived in this region between 86,000 and 68,000 years** ago.

- Even researchers **found a tooth** some 150,000 years **old belonging to a Denisovan.**
- This suggests the site may lie on a previously used dispersal route among hominins.

Tam Pà Ling Cave

- It is a sloping cave situated high in the **Annamite mountain range in Northern Laos.**
- The stratigraphy of the site indicates formation by periodic slope wash deposition from the muddy slope at the entrance of the cave.

Denisovans

- They are **extinct human relatives** otherwise known only from remains found in Siberia and Tibet.
- They lived lakhs of years ago, **coexisting with Neanderthals** in some regions and interbreeding with early modern humans in some cases.
- They were first identified as a separate species in 2010, following the discovery of a fragment of a finger bone and two teeth, dating back to about 40,000 years ago, in the **Denisovan Cave in Siberia.**

A new platform to produce hydrogen

- A great amount of research has been done to enhance the intrinsic reaction efficiency of photocatalysts. However, an optimal platform, which is critical for their practical application and commercialisation, has not yet been realised.
- Current systems fix catalyst powder or nanoparticles onto different surfaces, such as particulate sheet-type, film-type, and flat panel-type platforms, which are submerged under water. Such systems face practical issues such as leaching of catalysts, poor mass transfer, and reverse reactions. They also require additional devices to separate and collect the generated hydrogen from the water, which adds to the complexity of the device and increases the cost.
- Now researchers has developed a new type of photocatalytic platform for the mass production of hydrogen. The new platform has an upper photocatalytic layer and a lower supporting layer. Both layers are composed of a porous structural polymer that gives the platform a high surface tension. In addition, it is fabricated in the form of a **cryo aerogel**, a solid substance filled with gas, which enables it to float on water.
- The clear advantages of this platform over conventional ones include prevention of light attenuation by water, resulting in efficient solar energy conversion; easy

diffusion of hydrogen gas into air, thus avoiding reverse oxidation reactions and preserving high reaction yield; the easy supply of water to the catalysts located inside the elastomer- hydrogel matrix due to its porosity; and, finally, stability of catalysts—as they are immobilised inside the matrix—for long-term operation without leaching issues.

- The researchers have demonstrated the superior hydrogen production of the floatable platform compared with the conventional ones.
- Furthermore, the platform's scalability, which is essential for potential industrialisation, was demonstrated under natural sunlight. The experiment showed that the floatable photocatalytic platform using titania catalysts and a single copper atom with an area of 1 m2 could produce about 80 ml of hydrogen.
- "The proposed platform can even produce hydrogen from solutions that dissolve household waste, such as polyethylene terephthalate bottles," said Researchers "Consequently, the platform can be a solution for recycling wastes." Significantly, this study also presents a generalised platform for efficient photocatalysis and is not limited to hydrogen production.

India takes first step to remove animals from drug-testing process

An amendment to the New Drugs and Clinical Trial Rules (2023), recently passed by the Government of India, aims to replace the use of animals in research, especially in drug testing. The amendment authorises researchers to instead use non-animal and human-relevant methods, including technologies like 3D organoids, organs-on-chip, and advanced computational methods, to test the safety and efficacy of new drugs.

Alternative testing modes

- The limitations of the conventional testing process, beginning with animals, have led an increasing number of researchers to focus on systems that do a better job of capturing the intricacies of human biology and predicting humans' responses.
- In the last few decades, several technologies have been developed using human cells or stem cells. These include millimetre-sized three-dimensional cellular structures that mimic specific organs of the body, called "organoids" or "mini-organs".
- Another popular technology is the "**organ-on-a-chip**": they are AA-battery-sized chips lined with human cells connected to microchannels, to mimic blood flow inside the body. These systems capture several aspects of human physiology, including tissue-tissue interactions and physical and chemical signals inside the body.
- Researchers have also used additive manufacturing techniques for more than

two decades. In 2003, researchers developed the first inkjet bioprinter by modifying a standard inkjet printer. Several innovations in the last decade now allow a 3D bioprinter to 'print' biological tissues using human cells and fluids as 'bio-ink'. Such technologies, researchers say, are bringing us closer to recreating a human tissue or organ system in the laboratory.

- These systems promise to reshape drug-design and -development. Since they can be built using patient-specific cells, they can also be used to personalise drug-tests.

Status of regulations worldwide

- In 2021, the European Union passed a resolution on an action plan to facilitate transition towards technologies that don't use animals in research, regulatory testing, and education. The U.S. passed the **FDA Modernization Act 2.0** in December 2022, allowing researchers to use these systems to test the safety and efficacy of new drugs.
- In the same month, South Korea introduced a Bill called 'Vitalization of Development, Dissemination, and Use of Alternatives to Animal Testing Methods'. In June 2023, Canada amended its Environmental Protection Act to replace, reduce or refine the use of vertebrate animals in toxicity testing.
- In March 2023, the Indian government embraced these systems in the drug-development pipeline by amending the New Drugs and Clinical Trials Rules 2019. It did so after inviting comments from the people and in consultation with the Drug Technical Advisory Board, the statutory body that advises Central and State governments on drug-related technical matters.

Validation question

- To manage the complexity of recreating human tissues and organs in the petri dish, researchers often minimise the number of components required to simulate the disease being investigated. This means, for example, there can be no 'standard' or 'universal' liver-on-a-chip to study all liver diseases
- One lab may create a system with only liver cells, while another lab attempting to study the immune system and liver may also incorporate immune cells in its liver-on-a-chip. So regulators sometimes express concerns about variability in the data arising from differences in lab-to-lab protocols and expertise.
- It is important to bring out guidelines on the minimal quality criterion and standards for these systems. Also, the current guidelines on animal testing requirements must be re-evaluated and revised, considering newer developments in cell-based and gene-editing based therapeutics.

Sick sea lions washing ashore in California due to algae bloom

- It is a marine mammal that **belongs to the family Otariidae.**
- These are known for **their semi-aquatic lifestyle,** spending a significant amount of time both on land and in the water.
- **Appearance:**
    - They have a streamlined body with a large head and a long, flexible neck.
    - They typically have a brown or tan coat, and adult males develop a thick **mane of hair around their necks.**
- **Habitat:**
    - They inhabit rocky **shorelines, islands, and sandy beaches.**
    - They can be found in various regions, including the Pacific Ocean, the Atlantic Ocean, and parts of the Indian Ocean.
- **Diet:** Sea lions are **carnivorous** and primarily feed on fish, such as herring, anchovies, sardines, and squid.
- **Currently, there are six subspecies of sea lions:** Australian sea lions, California sea lions, Galapagos sea lions, New Zealand sea lions, South American sea lions, and Steller sea lions.

algal bloom

- It is a rapid and **excessive growth of algae** in aquatic environments.
- It can occur **in both freshwater and marine ecosystems** and is typically caused by a combination of factors such as nutrient availability, temperature, light, and water conditions.
- It causes the production of a **neurotoxin called domoic acid.**
- These can also proliferate because of human causes such as climate change and an **excess of nitrates washed out to sea.**

Lithium, vanadium among 30 minerals identified as 'critical' to India

Critical Minerals

- It is a **metallic or non-metallic element** that has **two characteristics**.
    - It is **essential for the functioning of our modern technologies**, economies or national security and
    - There is a **risk that its supply chains could be disrupted.**
- The **'criticality' of minerals changes with time** as supply and society's needs shift.
- **Applications:**
    - They are used **to manufacture advanced technologies,** including mobile phones, computers, fibre-optic cables, semiconductors, banknotes, and defence, aerospace and medical applications.

- Many are **used in low-emission technologies,** such as electric vehicles, wind turbines, solar panels, and rechargeable batteries.
- Some are also **crucial for common products, such as stainless steel and electronics.**

- **Examples**: **antimony, beryllium, bismuth, cobalt**, copper, gallium, germanium, lithium, vanadium etc.
- **Top Producers: Chile, Indonesia, Congo, China, Australia and South Africa**.

Mineral Security Partnership

- It is an ambitious new i**nitiative to bolster critical mineral supply chains, announced by the United States (US)** and key partner countries **in June 2022.**
- **The goal** of the alliance is to **ensure that critical minerals are produced, processed, and recycled in a manner that supports the ability of countries to realise the full economic development** benefit of their geological endowments.
- **The focus** of the grouping **would be on the supply chains of mineral**s such as Cobalt, Nickel, Lithium and also the 17 "rare earth" minerals.
- India was recently inducted into the Mineral Security Partnership (MSP).

With neutrinos, scientists observe our galaxy in a whole new way

- Scientists said, they have produced an image of the Milky Way not based on electromagnetic radiation - light - but on ghostly subatomic particles called neutrinos.
- This view differs fundamentally from what we can see with our own eyes or with instruments that measure other electromagnetic sources like radio waves, microwaves, infrared, ultraviolet, X-rays and gamma-rays.
- It is not stars and planets and other stuff observable thanks to their light, but rather the mysterious sources of neutrinos originating in the galaxy, perhaps remnants of explosive star deaths called supernovas.
- The neutrinos were detected over a span of a decade at the IceCube Neutrino Observatory at a U.S. scientific research station at the South Pole, using more than 5,000 sensors covering an area the size of a small mountain.
- Neutrinos are electrically **neutral**, undisturbed by even the **strongest magnetic field**, and rarely interact with matter, earning the nickname "ghost particle." As neutrinos travel through space, they pass unimpeded through matter - stars, planets and, for that matter, people.
- Just as light goes without stopping through glass, neutrinos can go through everything, including the whole planet Earth.

- The neutrino is an elementary particle, meaning they are not made up of anything smaller. They are not the building blocks of 'stuff,' like electrons and quarks are, but they are created in nuclear processes.
- They are also created when **protons** (subatomic particles) and (atomic) **nuclei** interact at very high energies
- Neutrinos are produced by the same sources as cosmic rays, the highest-energy particles ever observed, but differ in a key respect. Cosmic rays, as electrically charged particles, cannot be traced straight back to their source because strong magnetic fields in space alter their trajectory. The direction from which neutrinos arrive points directly back to their original source.

Euclid set to launch next week in quest for dark energy

- It is named after the **Greek mathematician Euclid** of Alexandria.
- This mission is **part of ESA's Cosmic Vision programme,** which plans to **explore the origin and components of the Universe** and the fundamental laws that govern it.
- The spacecraft will have a 1.2-metre-wide telescope and two instruments;
    - **A visible-wavelength camera** (the VISible instrument): It will look for tiny **distortions in the shapes of distant galaxies** from different points in time to highlight the tussle between the pull of gravity and the push of dark energy.
    - **A near-infrared camera/spectrometer**(the Near-Infrared Spectrometer and Photometer): It will look at how quickly the galaxies are moving away from each other, which will offer scientists insight into both dark energy and the working of gravity.
    - The detectors of the near-infrared instruments have been supplied by NASA, making the American agency an important part of the Euclid Consortium.
- It will be **floating 1.5 million kilometres above the Earth**, and the telescope hopes to deliver images that are at least four times sharper than ground-based ones.
- The spacecraft measures approximately 4.7 metres tall and 3.7 metres in diameter.
- It will be launched on a SpaceX Falcon 9 rocket and will **remain operational for a minimum of six years.**

Oceans cool the planet by releasing short-lived halogens that contribute 8-10 per cent of cooling

- Oceans, along with absorbing carbon dioxide and moderating the climate, also **cool the planet** by **releasing short-lived halogens** such as chlorine, bromine and iodine.
- The short-lived halogens from the ocean reduce warming by depleting ozone.
- They **increase methane's lifetime** in the atmosphere by destroying hydroxyl radicals (OH).
- They have increased the global methane burden by 14 per cent and 9 per cent for pre-industrial and present-day conditions.
- Halogens **increase the levels of water vapour, a greenhouse gas** in the atmosphere.
- The emission of halogen from the ocean is not the same across the world.
- Over continents, the emissions are small, while it is bigger in polar regions and some places with higher ozone levels.

Halogens

- The term Halogen in Greek means **salt-producing** because **it reacts** with many metals to **produce salts.**
- They are a group of elements **located in Group 17 of the periodic table, which** includes fluorine (F), chlorine (Cl), bromine (Br), iodine (I), and astatine (At).
- In 1826, Swedish **chemist Jons Berzelius** coined the term halogen for the entire group of elements.
- Unlike metals, they exist in **all three different states** of matter in their standard state.
- **For example,** fluorine is found naturally as a gas, bromine as a liquid, and the larger iodine is found naturally as a solid.
- **Reactivity:** Halogens are the most **reactive nonmetals on the periodic table** and are powerful oxidising agents.

WHO to declare soft drink sweetener Aspartame possible carcinogen: Report

Aspartame

- It is the world's most commonly used **low-calorie artificial sweetener**, which is approximately 200 times sweeter than sucrose (common sugar)
- It was discovered by **James M. Schlatter, a chemist**, in 1965 and was introduced to replace sucrose.
- The U.S. Food and Drug Administration (FDA) approved aspartame for use in some dry foods in 1981 and for carbonated beverages in 1983.
- It is made up of two amino acids: **aspartic acid and phenylalanine**, which are naturally occurring amino acids in many protein-rich foods.

- In the body, **aspartame is metabolised** into its constituent components, **aspartic acid, phenylalanine, and a small amount of methanol.**
- It is used worldwide as a sugar substitute in thousands of **foods and drinks,** including cereals, **sugar-free chewing gum,** low-calorie fruit juices and diet sodas.
- Around 100 countries around the world, including India, permit the use of aspartame.

ENVIRONMENT

Centre identifies 30 critical minerals: Why, how, and importance of the exercise

In a strategic move, the Centre has identified 30 critical minerals, including lithium, cobalt, nickel, graphite, tin and copper, which are essential for the country's economic development and national security.

1. Antimony
2. Beryllium
3. Bismuth
4. Cadmium
5. Cobalt
6. Copper
7. Gallium
8. Germanium
9. Graphite
10. Hafnium
11. Indium
12. Lithium
13. Molybdenum
14. Niobium
15. Nickel
16. PGE
    i. Platinum
    ii. Palladium
    iii. Rhodium
    iv. Ruthenium
    v. Iridium
    vi. Osmium
17. Phosphorous
18. Potash
19. REE
    i. Lanthanum
    ii. Cerium
    iii. Praseodymium
    iv. Neodymium
    v. Promethium
    vi. Samarium
    vii. Europium
    viii. Gadolinium
    ix. Terbium
    x. Dysprosium
    xi. Holmium
    xii. Erbium
    xiii. Thulium
    xiv. Ytterbium
    xv. Lutetium
    xvi. Scandium
    xvii. Yttrium
20. Rhenium
21. Selenium
22. Silicon
23. Strontium
24. Tantalum
25. Tellurium
26. Tin
27. Titanium
28. Tungsten
29. Vanadium
30. Zirconium

The exercise

- While elements such as **cobalt, nickel and lithium** are required for batteries used in electric vehicles or cellphones, rare earth minerals are critical, in trace amounts, in the semiconductors and high-end electronics manufacturing. Most countries of the world have identified critical minerals as per their national priorities and future requirements.
- The specific trigger for the latest exercise are **India's international commitments towards reducing carbon emissions**, which require the country to urgently relook at its mineral requirements for energy transition and net-zero commitments.

Critical minerals

- These are minerals that are essential for **economic development and national security**, and the lack of availability of these minerals or the concentration of extraction or processing in a few geographical locations could potentially lead to "supply chain vulnerabilities and even disruption of supplies".
- This is true for minerals such as lithium, graphite, cobalt, titanium, and rare earth elements, which are essential for the advancement of many sectors,

including hightech electronics, telecommunications, transport, and defence.

- One of the definitions cited in the report characterises a mineral as critical when the risk of **supply shortage** and associated **impact on the economy** is (relatively) higher than other raw materials. This definition of a critical mineral was first adopted in the US and the subsequent legislation that resulted from the analysis, the report said.
- The European Union also carried out a similar exercise and categorised critical minerals on the basis of two prerequisites: **supply risk and economic importance.**

Three-stage process

- In its three-stage assessment for identifying the minerals critical to India, the panel, in the first stage, looked at the strategies of various countries such as Australia, USA, Canada, UK, Japan and South Korea.
- In the second stage of assessment, an inter ministerial consultation was carried out with different **ministries to identify minerals critical to their sectors**. Comments and suggestions were received from the Ministry of Power, Department of Atomic Energy, Ministry of New and Renewable Energy, Department of Fertilisers, Department of Science and Technology, Department of Pharmaceuticals, NITI Aayog, etc.
- The third stage assessment was to derive an empirical formula for **evaluating minerals criticality**, taking cognizance of the EU methodology that considers two major factors — economic importance and supply risk.

Based on this process, a total of 30 minerals were found to be most critical for India, out of which two are critical as fertiliser minerals: Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.

Specialised agency

Alongside this list, the committee also called for a need for establishing a **National Institute or Centre of Excellence on critical minerals.** A wing in the Ministry of Mines can be established as a Centre of Excellence for Critical Minerals, the report said, adding that this proposed Centre will periodically update the list of critical minerals for India and notify the critical mineral strategy from time to time and will execute a range of functions for the development of an effective value chain of critical minerals in the country.

Diego Garcia: The tropical island 'hell' for dozens of stranded migrants

- It is a coral atoll, the largest and southernmost member of the **Chagos**

Archipelago, in the **central Indian Ocean.**

- It is a part of the **British Indian Ocean Territory**.
- It consists of a V-shaped sand-fringed cay and its lagoon is open at the north end.
- This island was **discovered by the Portuguese** in the early 16th century.

Chagos Archipelago

- It is part of the **British Indian Ocean Territory** (BIOT) and Mauritius claims the archipelago as its own.
- In 1810, Mauritius was **captured by the United Kingdom** and France ceded the territory in the Treaty of Paris.
- In 1965, three years before Mauritius got its independence, Britain separated the Chagos islands to carve out a 'British Indian Ocean Territory'.
- In 1966, the **UK leased Diego Garcia** (the biggest island in the Chagos archipelago) to **the US to create an air & naval base**. For constructing the defence installation, the inhabitants of the island were forcibly removed. In 1968 Mauritius was granted independence.
- In June 2017, the UN General Assembly adopted a resolution calling on the ICJ to deliver an advisory opinion on whether the continued administration of the Chagos Archipelago by the United Kingdom following the 1968 decolonisation process of Mauritius was lawful.
- In February 2019, the International Court of Justice (ICJ) issued an advisory opinion that Britain has an obligation to end its administration of the Chagos Archipelago — home to the U.S. military base of Diego Garcia — and complete the process of decolonisation of Mauritius.

Jitendra Singh inaugurates 'Lavender Festival' in J&K's Bhaderwah

Lavender Festival

- It is the 2nd year of the lavender revolution. **Bhaderwah** has emerged as the Lavender capital of India and an Agri StartUp destination.
- The Council of Scientific & Industrial Research- Indian Institute of Integrative Medicine (CSIR-IIIM) in supporting farmers in the cultivation of Lavender in the **Bhaderwah, Doda district, J&K** under **CSIR-Aroma Mission.**

CSIR-Aroma Mission

- It is a **flagship project** of CSIR under which Lavender cultivation is being promoted in the temperate regions of J&K.
- It was launched under **the Ministry of Science and Technology.**
- The project aims **to increase the income** of small and marginal farmers and develop agriculture-based Startups.

Lavender

- It is a **flowering plant** in the mint family that's easily identified by its sweet floral scent.
- It's believed to be **native to the Mediterranean**, the Middle East, and India.

Half of electricity to be from renewable sources by 2027

- India may have internationally committed to half its installed electricity being sourced from renewable sources by 2030, an estimate of the country's projected power needs by the Central Electricity Authority (CEA) suggests that this target may be achieved early, by 2026-27.
- The **National Electricity Plan** (NEP) prepared by the CEA is a five-year plan that assesses India's current electricity needs, projected growth, power sources, and challenges. The voluminous document notes that the share of non-fossil based capacity is likely to increase to 57.4% by the end of 2026-27 and may likely to further increase to 68.4% by the end of 2031-32 from around 42.5% as on April 2023.
- Installed capacity, however, does not perfectly translate into generated power as different sources of energy have varying efficiencies, and not all sources of power are available at all times. For instance, solar power is available only during the day and wind energy is dependent on climate vagaries.
- Accounting for this, the available power from renewable energy will only be around 35.04% of the total generated electricity by 2026-27 and 43.96% by 2031-32, the NEP estimates.

World's lithium

The news of potentially significant reserves of lithium, an element needed to manufacture batteries used in electric cars and other renewable energy infrastructure, in Jammu and Kashmir has been welcomed universally.

India's lithium industry

- India's electric-vehicle (EV) market was valued at $383.5 million in 2021, and is expected to expand to $152.21 billion in 2030.
- India imported 450 million units of lithium batteries valued at $929.26 million (₹6,600 crore) in 2019-2020, which makes the development of the country's domestic lithium reserves a matter of high stakes.
- Scholars have argued that the ongoing global transition to low-carbon economies, the rapid expansion of artificial intelligence (AI), and 5G networks will greatly reshape global and regional geopolitics. The access to and control over rare minerals, such as lithium and cobalt, will play a crucial role in these

epochal changes.

Who should own

- In July 2013, a three-judge bench of the Supreme Court of India ruled that the owner of the land has rights to everything beneath, "**down to the centre of the earth**". Yet, large areas of land, including forests — which make up more than 22% of India's landmass — hills, mountains, and revenue wasteland are publicly owned.
- The Supreme Court also recalled that the Union government could always **ban private actors from mining sensitive minerals**, as is already the case with **uranium** under the Atomic Energy Act 1962. In today's context, lithium is as important as, if not more than, uranium.

Other countries manage lithium reserves

- The stories of two South American countries, Chile and Bolivia — which have the largest known reserves of lithium — are particularly instructive.
- In Chile, the government has designated lithium as a strategic resource and its development has been made the exclusive prerogative of the state. The state has licensed only two companies — SQM and Albemarle — to produce lithium in the country.
- In April 2023, Chile's president Gabriel Boric announced a new "National Lithium Strategy", which many in the corporate sector took to be a declaration of his intention to nationalise the industry. which will allow the state to regulate the environmental impact of lithium-mining, distribute the revenue from lithium production more fairly among local communities, and promote domestic research into lithium-based green technologies.
- Bolivia's new constitution, approved by a popular vote in February 2009, gave the state "the control and direction over the exploration, exploitation, industrialisation, transport, and commercialisation of natural resources." The Morales administration nationalised lithium and adopted a hard line against private and foreign participation. This is believed to be one of the factors for the country's failure to produce any lithium at a commercial scale nearly 20 years after the industry was nationalised.
- Bolivia's current president, seeks to change that. However, instead of handing over lithium resources to the private sector, Join hands with other Latin American countries to design a 'lithium policy' that would benefit all their economies.
- Mexico's president Andrés Manuel López Obrador also nationalised lithium in February this year, declaring, "Oil and lithium belong to the nation, they belong to the people of Mexico."

Odisha to procure sal seeds from 9 districts; tribals say it's too late

Sal seeds:

- Odisha has **no major solvent extraction plant** that produces oil from sal seeds, due to which the intermediaries procure the seeds from the state at a lower rate and sell them at a higher rate to the oil companies of other states
- The state of Odisha **has a rich depository of sal seeds** accounting for 25 per cent of the country's production, which played a significant role in the economics of the tribal people in the state.
- Other major Sal seeds producing states include **Bihar, Chhattisgarh, Madhya Pradesh and Jharkhand.**

Sal Tree:

- It is a large **sub-deciduous tree** which is seldom completely leafless.
- It is **indigenous to India** and occurs in two main regions separated by Gangetic plain namely the northern and central Indian regions.
- It requires well-**drained, moist and sandy loam soil.**
- **Climatic conditions required:** It survives upto a **maximum temperature of 36°C to 44°C** and minimum temperature of 11°C to 17°C and it needs an average rainfall of 1000 mm to 3500 mm per annum.
- The resin of this tree is used in the indigenous system of medicine.

Villagers attack forest personnel clearing encroachments in Chhattisgarh tiger reserve; three hurt

Udanti Sitanadi Tiger Reserve:

- **Location**: It is located in the Indian state of **Chhattisgarh**.
- **Udanti and Sitanadi are two wildlife sanctuaries** combined together, covering a total area of 1842.54 kilometre square.
- It was **declared a tiger reserve in the year 2008-09.**
- The **Udanti river flow through the Reserve**. There is few perennial springs including the famous **Deodhara and Godene falls.**
- **Topography**: The topography of the area is a b**roken mass of land traversed by innumerable hill ranges intercepted by strips of plains**.
- **Flora**:
    - The flora of the tiger reserve contains various **types of forest crop mixed with Sal forest.**
    - **Dry Deciduous Forests, Tropical and Sub-Tropical vegetation** is also observed here.
- **Fauna**:

- **All the representative faunal species of Central India are found** in both the Core areas of UdantiSitanadi Tiger reserve.
- **Asiatic Wild Buffalo is the key endangered species found** in the Core Area.
- Apart from the tiger other endangered and rare species are **Indian Wolf, Leopard, Sloth Bear and Mouse Deer.**

Climate change and human intervention threaten the Myristica swamps of Kerala

- These are freshwater swamps predominated by members of the **Myristicaceae family.**
- These forests are characterized by **trees with large protruding roots jutting** out of waterlogged soil which remains inundated throughout the year.
- They have evolved over millions of years and are comprised of old-growth trees.
- **Geographical distribution:** In India, these unique habitats occur in **the Western Ghats** and a smaller distribution exists in the **Andaman and Nicobar Islands**.
- **Climatic conditions:** The formation of these swamps is dependent on abiotic conditions like the shape of the valley between the forested hills, the amount of rainfall a place receives (with an average of 3000 mm), and water availability throughout the year.
- Typically, Myristica swamps are seen next to rivers and help in retaining water and act as a sponge, ensuring perennial water availability.
- These swamps are **home to many vertebrate and invertebrate faunal species**. This is due to stable macroecological conditions like high humidity, moderate temperature, and macrohabitat availability.

World Environment Day June 5: The Mission LiFE succeeds in creating environmental awareness

EIACP Programme:

- It is one of the Central Sector sub-scheme being implemented in alignment with Mission LiFE.
- The **Environmental Information System** (ENVIS) is renamed EIACP (Environmental Information, Awareness, Capacity Building and Livelihood Programme).
- ENVIS came into existence as a planned programme in 1983.
- It has been subsumed within the revamped scheme of Environment Education, Awareness, Research and Skill Development.

- ENVIS EIACP serves as a one-stop platform for the **dissemination of environmental information, informed policy formulation** on various facets of the environment and facilitation of alternate livelihoods through green skilling.

Mission LiFE (Lifestyle for Environment)

- It was first proposed by the Prime Minister of India at COP 26.
- It is envisioned as an India-led global mass movement that will nudge individual and collective action **to protect and preserve the environment**.
- The global movement will showcase sustainable goals and climate actions taken by countries and individuals around the world.
- It makes the fight against climate change democratic, in which everyone can contribute with their respective capacities.
- It emboldens the spirit of the **P3 model, i.e. Pro Planet People.**
- It functions on the basic principles of 'Lifestyle of the planet, for the planet and by the planet'.

Rare, deadly 'flesh-eating' bacteria is washing up on Florida's beaches.

Seaweeds

- "Seaweed" is the **common name for countless species of marine plants and algae** that **grow in the ocean as well as in rivers, lakes**, and other water bodies.
- They **range in colours from red, green, brown and black** and also **vary in size**, from microscopic to large underwater forests.
- Seaweeds are **generally anchored to the sea bottom or other solid structures by rootlike "holdfasts,"** which perform the sole function of attachment and do not extract nutrients as do the roots of higher plants.
- Seaweeds **often form dense growths on rocky shores or accumulations in shallow water.**
- **Many show a well-established zonation along the margins of the seas**, where the depth of the water is 50 metres (about 165 feet) or less.
- **Uses**:
    - A number of seaweed species **are edible, and many are also of commercial importance** to humans.
    - Some are **used as fertilize**rs or as **sources of polysaccharides**.
    - The **high amount of antioxidants present in seaweed protects the body from damages caused by free radicals** and protect cells from their impact.
    - Animal studies have found that **substances found in seaweed help**

increase the production of a protein that metabolises fat effectively.

- Research suggests that **consuming seaweed can help in managing diabetes** by **balancing the sugar levels** in the blood.
- Many seaweeds **contain anti-inflammatory and anti-microbial agents**.
- They are **effective binding agents (emulsifiers) in such commercial goods as toothpaste and fruit jelly**, and **popular softeners (emollients) in organic cosmetics** and skin-care products.

Injured tigress dies in Dudhwa buffer zone

- It is located on the **Indo-Nepal border** in the district **Lakhimpur-Kheri in Uttar Pradesh.**
- It **includes the Dudhwa National** Park, and **two nearby Sanctuaries, viz. Kishanpur and Katerniaghat,** besides forest areas of North Kheri, South Kheri and Shahjahanpur forest divisions in its buffer.
- **Rivers**: The **Sharda River flows by the Kishanpur** WL Sanctuary, the **Geruwa River flows through the Katerniaghat** WL Sanctuary and the S**uheli and Mohana streams flow in the Dudhwa National Par**k, all of which are **tributaries of the mighty Ghagra River**.
- **Vegetation**: The vegetation is of the **North Indian Moist Deciduous type**, containing some of the **finest examples of Sal forests (Shorea robusta) in India**.
- **Flora**: The flora is **predominantly Sal forest** alongwith its associate tree species like Terminalia alata (Asna), Lagerstroemia parviflora (Asidha), Adina cordifolia (Haldu), Mitragyna parviflora (Faldu), Gmelina arborea (Gahmhar), Holoptelea intgrifolia (Kanju) etc.
- **Fauna**:
  - The major mammals include: **Guldar, Tiger, Fishing cat, Monkey, Langur**, Mongoose, Small Indian Mongoose, small Indian civet, Jackal etc.
  - **Birds include a wide variety of species, which include migratory and resident ones like Dabchick, spotbilled pelican,** Large cornorant, Little cormorant, Grey Heron, White stork, Black storck, White Ibis etc.
  - **Reptiles include: Mugger, Ghariyal, Python, Sandboa,** Banded krait, Russel's viper, Rat snake etc.

World Environment Day: History, significance and theme

- It is observed on the 5th of June every year since 1973 as part of the United

Nations Environment Programme to build awareness to save life on planet Earth.

- The event has been led by **the United Nations Environment Programme** (UNEP) since its inception in 1973.
- The theme of this year's World Environment Day will focus on **solutions to plastic pollution** under the campaign #BeatPlasticPollution.
- This year's event is **hosted by Côte d'Ivoire** in partnership with the Netherlands.

United Nations Environment Programme (UNEP):

- It is the leading global authority on the environment.
- **Mission:** To inspire, inform, and enable nations and peoples to improve their quality of life without compromising that of future generations.
- It is driving transformational change by drilling down on the root causes of the triple planetary crisis of **climate change, nature and biodiversity loss and pollution**.
- Headquarters: **Nairobi, Kenya.**
- **Reports published by UNEP**: Emission Gap Report, Global Environment Outlook, Frontiers, Invest into Healthy Planet.
- It provides secretariat functions for numerous multilateral environmental agreements (MEAs) and other entities as follows:
    - Convention on Biological Diversity **(CBD)**
    - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
    - Minamata Convention on Mercury
    - Basel, Rotterdam and Stockholm Conventions
    - Vienna Convention for the Protection of Ozone Layer and the Montreal Protocol
    - Convention on Migratory Species

These Odisha tribal women earn big with mahua ladoos

Van Dhan Vikas Kendras

- The **Ministry of Tribal Affairs** and **Tribal Cooperative Marketing Development Federation of India (TRIFED)** launched the **Van Dhan scheme** in 2018 to improve tribal income through the value addition of tribal products.
- The **Van Dhan Vikas Kendra Clusters** provide the Van Dhan Vikas Kendras economies of scale, livelihood and market linkages, as well as entrepreneurship opportunities to Tribal forest gatherers.

Mahua Tree

- It is mainly cultivated or harvested in the wild in Southern Asia for its edible flowers and oil seeds.
- It is commonly known as madhūka, madkam, mahuwa, Butter Tree, mahua, mahwa, mohulo, Iluppai , Mee or vippa chettu.
- It is a frost resistant species that can grow in marginal **areas of dry tropical and subtropical forests** up to an altitude of 1200-1800 m.
- It can be found scattered in pastures, in crop fields in central India, and on rivers banks in semi-evergreen forests.
- It grows well where annual **rainfall is between 500 mm to 1500 mm**, and where temperatures are in the range of 2-46°C.
- It requires **loamy or sandy-loam soils** with good drainage and also occurs on shallow stony, clayey and calcareous soils.

Tiger Dies After Being Found Injured In Pond

Kanha Tiger Reserve (KTR)

- **Kanha Tiger Reserve, also called Kanha National Park**, is the **largest national park of Madhya Pradesh.**
- **Location**:
    - It is located in the **Mandla and Balaghat districts of Madhya Pradesh**.
    - It is nestled in the **Maikal range of Satpuras**, the heart of India that forms the **central Indian highlands**.
- Kanha National Park was created on 1 June 1955, and **in 1973 was made the Kanha Tiger Reserve.**
- **The forest depicted** in the **famous novel by Rudyard Kipling**, **The Jungle Book,** is thought by some to be based on jungles, including this reserve.
- It is also the **first tiger reserve in India to officially introduce a mascot, "Bhoorsingh the Barasingha".**
- **Flora**:
    - The **lowland forest is a mixture of sal** (Shorea robusta) and **other mixed forest trees** interspersed with meadows.
    - The **highland forests are tropical moist dry deciduous type** and of a completely different nature with bamboo on slopes (Dendrocalamus strictus).
- **Fauna**:
    - The park has a **significant population of Royal Bengal Tiger, leopards, the sloth bear** and Indian wild dog.

- The Park is **respected globally for saving the Barasingha** (the state animal of Madhya Pradesh) **from near extinction**.

Ramanathapuram DFO wins Unesco award for Gulf of Mannar Biosphere Reserve management

Gulf of Mannar Marine National Park

- Designated as a Biosphere Reserve, the Gulf of Mannar is **one of the biologically richest coastal regions in all of mainland of India**.
- It is the **first Marine Biosphere Reserve in the South and South East Asia**.
- **Location**: It is located 160 km between **Dhanushkodi and Thoothukudi in Tamil Nadu.**
- This Marine Biosphere Reserve **encompasses a chain of 21 islands** (2 islands already submerged) and **adjoining coral reefs off the coasts**.
- Gulf of Mannar Marine National Park, **established in 1980**, boasts t**hree surreal aquatic ecosystems – mangroves, seagrass, and coral reef.**
- **Flora**:
  - The intertidal areas are **dominated by mangroves belonging to the Rhizophora, Avicennia,** Bruguiera genus.
  - **Seagrass is another prolific species**, about 12 species exist here.
  - **About 150 species of seaweeds to are found in the waters**. There is one endemic plant, a flowering herb called Pemphis acidula on the parklands.
- **Fauna**:
  - **Dugong, an endangered marine mammal**, is the main attraction of the Gulf of Mannar Marine National Park.
  - It has recorded some **117 species of hard Coral**. It is home to different vulnerable whales like **humpback whales, blue whales, fin whales, etc**.

Marine species including whales and dolphins under significant threat from noise pollution

Convention on the Conservation of Migratory Species of Wild Animals (CMS):

- CMS also **referred to as the Bonn Convention**, is an **environmental treaty under the aegis of the United Nations Environment Programme.**
- It was **signed in Bonn**, Germany, **on 23 June 1979.**
- It provides a global platform **for the conservation and sustainable use of migratory animals** and their habitats.
- CMS is the **only global and UN-based intergovernmental organisation** established **exclusively for the conservation** and management **of terrestrial,**

aquatic and avian migratory species throughout their range.

- The **parties to the convention acknowledge** the importance of **conserving migratory species, and the need to pay special attention** to species whose conservation status is unfavourable.
- Activities by CMS Parties may **range from legally binding treaties** (called Agreements) **to less formal instruments**, such as Memoranda of Understanding.
- The **Conference of Parties (COP) is the decision-making organ of this convention**.
- **CMS has two Appendices**. These appendices list migratory species to which the Convention applies.
    - **Appendix I** lists **endangered migratory species** and includes **prohibitions regarding the take of these species**.
    - **Appendix II lists species that have an 'unfavourable conservation status'** (as per the conditions set out in the Convention) a**nd encourages range states to draft range-wide agreements** for conservation and management of these species.
- **India and CMS:**
    - India has been a **party to the CMS since 1983.**
    - India has also **signed non-legally binding MOU with CMS** on the conservation and management of **Siberian Cranes (1998), Marine Turtles (2007), Dugongs (2008) and Raptors (2016).**

It's raining tiger cubs in Amrabad Tiger Reserve

Amrabad Tiger Reserve (ATR)

- **Location**: It is located in the **Nagarkurnool and Nalgonda districts** in the southern part of **Telangana**.
- Spread over **2611.4 square kilometers**, it is **one of the largest tiger reserves in India**.
- It was notified as a sanctuary in 1983, and **after the State bifurcation, it was declared as Amarabad Tiger Reserve in 2015.**
- ATR **covers a part of the Nallamala Forest** and is home to a variety of flora and fauna.
- The **hilly terrain** of this Tiger Reserve, with **deep valleys and gorges,** forms the **catchment of the Krishna River.**
- **Flora**:
    - **Dense grass occurs in 30%** of the area and is scattered in an additional 20%.

- **Dominant tree species include Terminalia tomentosa, Hardwickia binata**, Madhuca latifolia. Diospyros melanoxylon, Gardenia latifolia etc.

- **Fauna**:
  - Major wild animals found are **Tiger, Leopard, Wild dog, Indian Wolf, Indian fox,** Rusty-spotted cat, Small Indian civet, Sloth bear, Honeybadger, Wild boar etc.
  - **Over 303 bird species** have been identified in this region. Some **important groups include Eagles, Pigeons, Doves, Cuckoos**, Woodpeckers, Drongos etc.

Kaziranga mahouts caught for consuming rare turtles

Kaziranga National Park

- It is located in the **state of Assam.**
- It is also a **UNESCO World Heritage Site** and houses two-thirds of the total world population of greater one-horned rhinoceros.
- **Flora:**
  - It is a **mix of eastern wet alluvial grasslands,** semi-evergreen forests and tropical moist deciduous forests.
  - It is primarily famous for its **dense and tall elephant grasses** intermixed with small swamplands.
  - It also includes an abundant cover of water lilies, water hyacinths and lotus.
- **Fauna:**
  - It is home to the **One-horned rhinoceros**, Leopard, Fishing Cat, other Lesser cats, royal Bengal tiger, Large Indian Civet, Small Indian Civet, Sambar, Barking deer, Hog deer, Gaur, Hog Badger, Capped Langur, etc.
  - It is also one of the last remaining **homes of the endangered and endemic western hoolock gibbon,** the only species of apes found in India.
  - It is one of the last homes of the **critically endangered Bengal florican.**

Three States rebuff GM regulator's directive to test transgenic cotton

Genetic Engineering Appraisal Committee (GEAC)

- It is a **statutory committee** constituted **under the** "Rules for the Manufacture, Use/Import/Export and Storage of Hazardous Micro Organisms/Genetically Engineered Organisms or Cells **(Rules, 1989)" framed under the Environment (Protection) Act, 1986.**
- GEAC functions **under the Ministry of Environment, Forest and Climate**

Change (MoEF&CC).

- It was **earlier called Genetic Engineering Approval Committee,** which was changed to Genetic Engineering Appraisal Committee in the year 2010.
- **Functions**:
    - As per Rules, 1989, it is **responsible for the appraisal of activities involving large scale use of hazardous microorganisms and recombinants** in research and industrial production from the environmental angle.
    - The committee is also **responsible for appraisal of proposals relating to release of genetically engineered (GE) organisms** and products **into the environment,** including experimental field trials.
    - It keeps a **check on the use, import, and export of genetically modified (GM) organisms a**nd crops.
    - GEAC also has the **power to prohibit the manufacture and use of certain recombinant**s as they are hazardous for commercial use.
- **Composition**:
    - GEAC is **chaired by the Special Secretary/Additional Secretary of MoEF&CC** and **co-chaired by a representative from the Department of Biotechnology** (DBT).
    - **Presently, it has 24 members** and meets every month to review the applications in the areas indicated above.
    - The **members comprise experts from other ministries as well as institutions** such as the ICAR, ICMR, CCMB, and so on.

Indonesia's Anak Krakatau Volcano Erupts, Spews Ash, Lava

Anak Krakatau volcano

- This volcano island is located in **Indonesia's Sunda Strait between the main Java and Sumatra islands.**
- Anak Krakatau, which means "**child of Krakatau,"** is the offspring of the famous Krakatau, whose monumental eruption in 1883 triggered a period of global cooling.
- It was the longest eruption since the explosive collapse of the mountain caused a deadly tsunami in 2018

Sunda Strait

- The Sunda Strait is the strait between the Indonesian islands of Java and Sumatra.
- It connects the **Java Sea to the Indian Ocean.**

- Numerous volcanic islands lie in the strait.
    -

Biologists discover 20 new species of sea lettuce, a potential new food source

Sea Lettuce:

- Sea lettuce (**Ulva lactuca**) is **commonly referred to as seaweed**.
- It is a **genus of green algae** usually **found growing on rocky shores of seas and oceans** around the world.
- Some species of Sea lettuce **also grow in brackish water rich in organic matter** or sewage **and can accumulate heavy metals**.
- It **usually grows attached by a small discoid holdfast to rocks and shells**, but it **can also grow in a free-floating,** non-attached form, sometimes in prolific masses.
- It **needs a lot of sunlight to flourish.**
- **It is perennial, and grows all year**, although the largest blooms occur during the summer.
- **Large masses of sea lettuce** are often an **indicator of nutrient pollution** in the water.
- In some parts of the world, **people eat sea lettuce in soups and salads.**
- **Features:**
    - It **resembles leaves of green lettuce**. The **color is often bright green** but can **range from dark green to almost yellow.**
    - The **leaves can be narrow or broad** and **single or multi-lobed**. They're **often rounded or oval with ruffled edges and riddled with holes** or perforations.
    - They are **rich in iodine and vitamins A, B, and C.**

Tiger Safari In Ramgarh Reserve Buffer Zone Soon

Ramgarh Vishdhari Tiger Reserve:

- **Location**: It lies in the southeastern part of **Rajasthan in Bundi district**.
- It is in **continuation with the buffer area of Ranthambore tiger reserve** on the North-eastern side **and Mukundara Hills tiger reserve** on the southern side.
- It was **notified as a tiger reserve on May 16, 2022.**
- **River**: **Mez**, a **tributary of the Chambal River**, passes through the tiger reserve.
- **Vegetation: Dry Deciduous Forest**

- **Topography**: It varies from **gentle slopes** to **steep rocky cliffs,** from the **flat-of hills of Vindhyas** to the **conical hillocks and sharp ridges of the Aravallis.**
- **Flora**:
    - The habitat is **dominated by Dhok** (Anogeissus pendula) trees.
    - **Other important flora includeS Khair (Acacia catechu), Ronj (Acacia Leucophloea**), Amaltas (Cassia fistula), Gurjan (Lannea coromodelica), Saler (Boswellia serrata) etc.
- **Fauna**:
    - The area is **dominated by Leopards and Sloth bears**.
    - Other **important fauna includes Jungle cat, Golden jackal, Hyaena**, Crested Porcupine, Indian Hedgehog, Rhesus macaque, hanuman langur etc.
    - It is also the **natural habitat for the Indian Star tortoise**.

New species of flying geckos uncovered in Mizoram

Mizoram parachute gecko

- It is a **newly discovered species of gliding geckos**.
- The Mizoram parachute gecko, or **Gekko mizoramensis**, is **one of the 14 geckos known to take to the air.**
- It is thought that the species **evolved as a result of being separated from its closest relative, G. popaensis, by the Arakan Mountains.**
- **Features**:
    - **Unlike other gliding reptiles, which use the bone to form their flying surfaces, these geckos have flaps of skin.**
    - **When the lizards leap off** a tall structure, **air resistance pushes the flaps out to their full extent, much like a parachute**, slowing the speed at which they fall.
    - **The skin flaps also help to break up their shape, acting as a camouflage** against predators.
    - Their specialised **camouflage and body shape are shared by multiple species**, making it hard to tell them apart from one another.

Geckos

- They are **reptiles and are found on all continents except Antarctica**.
- They are believed to be **among the earliest evolving squamates**, **the group that contains all lizards, snake**s and their close relatives.
- There are **more than 1,200 species of gecko** today, making up **around a fifth of all known lizards.**

- They have adapted to **habitats from rain forests, to deserts, to cold mountain slopes**.
- **Features**:
    - They had **evolved the adhesive pads on their feet which allow them to climb almost any surface** using a network of microscopic hairs.
    - Like snakes, **most geckos have a clear protective covering over their eyes**.
    - A gecko's **tail may be long and tapering, short and blunt, or even globular**.
    - The **tail serves in many species as a storehouse of fat** upon which the animal can draw during unfavourable conditions.
    - Unlike other reptiles, **most geckos have a voice,** the call differing with the species and **ranging from a feeble click or chirp to a shrill cackle or bark.**

Maharashtra: Golden jackal falls in 25 feet well, rescued after 3 hour long operation

Golden Jackal

- The golden jackal, **also known as the common jackal**, is a **medium-sized wolf-like canid**.
- **Scientific Name: Canis aureus**
- They are **small compared to** their close relatives, **wolves, and wild dogs.**
- **Distribution**:
    - They are widely distributed from **North and East Africa to southeastern Europe and South Asia, including Burma.**
    - They are **abundant in valleys and along rivers and their tributaries**, canals, **lakes, and seashores**, but are **rare in foothills and low mountains**.
    - They are **quite widespread across India**. Right from the **Himalayan foothills**, **down to the Western Ghats,** the Golden Jackal has a wide distribution.
- **Features**:
    - It has **long, pointed ears and long hair**.
    - The **coat of the animal is rather coarse and not very long**.
    - The **tail is fluffy and long**.
    - The **coloration of their fur depends on the season** of year and region, varying **from yellow to pale gold with a brown tip**.

- **They are monogamous**, meaning they mate for life.
- **They are opportunistic omnivores** that feed on both plants and meat.
- They are **territorial animals that hunt in groups**. Their groups are **known as packs.**
- Golden jackals **stay nocturnal if they live in an area that humans inhabit**. They remain under rocks for shelter during the day and come out at night. However, **in other areas, they may be partly diurnal**, meaning they are active during the day.

- **Conservation Status:**
  - **IUCN: Least Concern**
  - **Wildlife Protection Act, 1972: Schedule II**

Earthquake of magnitude 7.2 strikes near Tonga

Tonga

- Tonga, officially the **Kingdom of Tonga**, also **called Friendly Islands**, is a **country in the southwestern Pacific Ocean.**
- It is an **archipelago of more than 170 island**s divided into **three main island groups:** Tongatapu in the south, Haʻapai in the centre, and Vavaʻu in the north.
- Out of these groups of islands, **only 36 islands are inhabited.**
- **Tonga's western islands are volcanic** (four with active volcanoes) **and sit well above sea level.** Those to the **east are coral and are more low-lying.**
- Tonga **has no direct neighbours**. **Nearby countries include Fiji** to the west, the **Cook Islands** to the east **and Samoa** north.
- **Capital: Nuku'alofa**
- **Population**: It has a population of **100,000 inhabitants** (in 2016). **Almost two-thirds** of Tonga's population **live on the main island of Tongatapu**, where **also the capital city Nuku'alofa is located.**
- **Spoken Languages: Tongan and English** (both official).
- **Economy**: Tonga has **no strategic or mineral resources** and **relies on agriculture, fishing and the money sent home by Tongans** living abroad.
- **Political System: It is a constitutional monarchy.**
- **History**:
  - It is the **only kingdom in the Pacific** since **Taufa'ahau (King George) in 1875 declared Tonga a constitutional monarch** He also **gave Tonga its first constitution.**
  - **In 1970** the former British protectorate a**cquired its independence and became a sovereign natio**n, but **remains an active member of the**

Commonwealth.

Carnivorous alligator gar, the latest threat for Srinagar's idyllic Dal Lake?

Alligator garfish

- It is a close relative of the **bowfin species**
- It is known for its crocodile-like head and razor-sharp teeth.
- It is a **ray-finned euryhaline fish** and is one of the biggest freshwater fish in North America and the largest species in the 'gar' family.
- This garfish grows rapidly and has a life span of 20-30 years.
- They can even sustain in the cold waters they mostly live in is 11-23 degrees Celsius.
- **Geographical distribution:** Normally found in **northern and central America** and also in Mexico.
- **Threats:** It is a **predator fish and a carnivore;** it can eat all types of fish and therefore poses a threat to native species and the overall ecosystem.

Dal Lake

- It is a lake in Srinagar, the summer capital of **Jammu and Kashmir.**
- It is surrounded by the **Pir Panjal mountains.**
- The lake is part of a natural wetland which covers 21.1 square kilometres (8.1 sq. mi), including its **floating gardens**.
- The floating gardens, **known as "Raad"** in Kashmiri, blossom with lotus flowers during July and August.
- The wetland is divided by causeways into four basins; Gagribal, Lokut Dal, Bod Dal and Nagin (although Nagin is also considered an independent lake).
- **Islands:**
    - Dal Lake includes 3 islands, 2 of which are marked with beautiful **Chinar trees.**
    - The island located on the **Lakut Dal** is known as **Roph Lank**(Silver Island) and is marked by the presence of majestic Chinar trees at the four corners, thus known as Char-Chinari (Four Chinars).
    - The second Chinar Island, known as **Sone Lank** (Gold Island), is located on the Bod Dal (Big Dal) and overlooks the holy shrine of Hazratbal.
- Dal Lake is also popular for the **floating market** (known as Raad) where vendors have their own Shikaras and approach tourists.

MP govt to club Nauradehi & Durgavati sanctuaries to create state's 7th tiger reserve

Nauradehi Wildlife Sanctuary

- It covers nearly 1197 km² area across three districts, i.e., **Sagar, Damoh and Narsinghpur, of Madhya Pradesh.**
- It is the **largest wildlife sanctuary in Madhya Pradesh**.
- The entire Sanctuary is **situated on a plateau**, **forming part of the upper Vindhyan range** and has a **connecting forest patch with Veerangana Durgawati Sanctuary** in Damoh district towards the east, which extends up to Bandhavgarh National Park.
- The Sanctuary is **classified under Deccan peninsula biogeographic region**.
- **Three fourth of sanctuary falls in the Yamuna,** and **one-fourth** of the sanctuary **falls in the Naramada basin.**
- **Wildlife Corridor**: It acts as a **corridor for Panna Tiger Reserve and Satpura Tiger Reserve** while indirectly connecting Bandhavgarh Tiger Reserve via Rani Durgawati Wildlife Sanctuary.
- **Vegetation: Dry deciduous type**
- **Flora**: The **chief floral elements include Teak, Saja, Dhaora, Bhirra**, Ber, Amla etc.
- **Fauna**: The chief faunal element includes **Nilgai, Chinkara, Chital, Sambhar, Black Buck, Barking deer, Commom Langur Rhesus Macaque**, Fresh water Turtles, Spotted Grey Creeper, Cranes, Egrets, Lapwings etc.

Durgavati Wildlife Sanctuary

- **Location**: Rani Durgavati Wildlife Sanctuary is located in **the Damoh district of Madhya Pradesh.**
- It is **named after Rani Durgavati, a queen of the Gond people.**
- The sanctuary was **notified by the Government of Madhya Pradesh in 1996**.
- The **Singorgarh Fort** is located within the sanctuary
- **Vegetation**: The vegetation is predominantly **tropical mixed dry deciduous forest.**
- **Flora**: **Pterocarpus marsupium, Terminalia alata, Anogeissus latifolia**, Madhuca indica, Butea monosperma, and Lagerstroemia parviflora are the most common trees in the sanctuary.
- **Fauna**:
    - It hosts 18 species of mammals, including the **leopard, wolf, jackal, Indian fox, striped hyena, and sloth bear.**
    - Besides these, the sanctuary is also home to 177 species of birds, 16 species of fish and reptiles, and 10 species of amphibians.

Remains of Gonkoken nanoi, a new species of duck-billed herbivorous dinosaur, found in Chile

- It is a species of **herbivorous dinosaur** previously unknown in the southern hemisphere.
- These were slender-looking dinosaurs, which could easily adopt a **bipedal and quadrupedal** posture to reach the vegetation at height and ground level.
- This type of duck-billed dinosaur was **common in North America, Asia and Europe** during the **Cretaceous period**.

Cretaceous Period

- The Cretaceous Period, in geologic time, is the **last of the three periods of the Mesozoic Era.**
- The Cretaceous began 145.0 million years ago and ended 66 million years ago.
- It followed the Jurassic Period and was **succeeded by the Paleogene Period.**

Whale Sharks Spotted Off East Coast Road

Whale Sharks

- The whale shark is the **largest fish in the world** and the largest fish known to have lived on this planet.
- **Scientific Name: Rhincodon typus**
- They **feed on plankton** and **travel large distances to find enough food** to sustain their huge size, **and to reproduce**.
- They are one **of only three species of filter feeding sharks.**
- **Distribution**: They can be **found in all temperate and tropical oceans** around the world, **except the Mediterranean Sea**.
- **Features**:
    - It is a large fish that can **grow up to 60 feet long**, though most specimens reach **about 40 feet in length and weigh about 15 tons.**
    - They are **dark gray on top and light underneath**, with a **series of light spots or stripes** covering the dark parts of their bodies. This **helps to camouflage** them as they swim.
    - **Unlike most shark species**, **its mouth is located at the front of the head (terminal)** instead of the underside of the rostrum (subterminal).
    - **Filter Feeders**:
        - They are filter feeders and **can neither bite nor chew**. They can **process more than 6,000 litres of water an hour through their gills.**
        - Inside the mouth are **specialized flaps called velums**. These

stop the backflow of water as the whale shark closes its mouth, preventing the loss of food.

- The whale shark **also eats small and large fish and mollusks**, including sardines, anchovies, mackerels, squid, and even small tuna and albacore.

- **Conservation Status:**
  - **IUCN: Endangered**

Reef Sharks Are Disappearing Around the World

Reef Sharks

- They play a major role in shaping **Caribbean reef communities.**
- As the top predators of the reef and **indicator species** for marine ecosystems, they help maintain the delicate balance of marine life in reef environments.
- **Habitat:** Tropical waters near coral reefs, sea grass beds and mangroves.
- **Species of reef sharks:** The Caribbean reef shark, nurse shark, grey reef shark, blacktip reef shark and whitetip reef shark
- **Threats:**
  - They are **highly valued for their mea**t, leather, liver oil, and fishmeal, which make them prone to overfishing and targeting.
  - They are threatened by the **degradation and destruction of their coral reef** habitat due to coastal development and resulting pollution.
  - They are often **unintentionally caught by unregulated** and illegal fishing practices that cannot distinguish the reef shark from the fishers' targeted species.

6.4 Magnitude Earthquake Hits Gulf Of California

Gulf of California

- The Gulf of California, **also called the Sea of Cortez** is a **large inlet of the eastern Pacific Ocean** along the **northwestern coast of Mexico**.
- It **separates the mountainous Lower California Peninsula**/Baja California Peninsula **in the west from the states of Sonora and Sinaloa** on the mainland **of Mexico in the east.**
- **Geography**:
  - It covers an **area of 160,000 sq. km** and has a **long coastline of approximately 4,000km.**
  - It is **about 1,126km long** and has a **maximum width ranging between 48 to 241km.**

- The Gulf is **divided into two portions** and is **separated by a narrowing that is marked by the islands of Tiburón and Angel de la Guarda.**
- The **northern portion is relatively shallow**, with a mean depth of 180m, while the **southern portion contains many depressions and the deepest** of these depressions **reaches a maximum depth of over 3,000m.**
- The **head of the gulf is dominated by the large Colorado River Delta** through which the **Colorado River drains into the Gulf.**
- The **long coastline** of the gulf **is extremely irregular and forms numerous small bays.**

- **Geology**: The Gulf of California was c**reated around 5.3 million years ago due to the movement of tectonic plates** that separated the Baja California Peninsula from the North American Plate.
- **Islands**:
  - There are about **37 major islands** in the Gulf of California that is **mostly located on its western side.**
  - It is believed that these **islands were created due to volcanic eruptions** and several of these **islands are home to volcanoes.**
  - Some of the **major islands include the Isla Ángel de la Guarda, Isla Tiburón, Islas** Marías, Isla Partida, Islas San Francisco, Isla Coronados, etc.
- **Climate**: Due to the presence of an uninterrupted chain of mountains on the Baja California Peninsula, the Gulf of California **experiences a 'continental' climate rather than an 'oceanic' climate.**

Estuarine croc kills school student near Bhitarkanika national park

Bhitarkanika National Park

- **Location**: It is located in **Kendrapara district** in the state of **Odisha**.
- It is India's **second-largest mangrove ecosystem** after the Sunderbans.
- It is a 145 Sq. km large national park which was **designated on 16th September 1998** and **obtained the status of a Ramsar site in August 2002,**e., the **second Ramsar site** of the State after the Chilika Lake.
- This National Park is a **network of creeks and canals which are inundated with waters from rivers Brahmani, Baitarani, Dhamra and Patasala,** forming a unique ecosystem.
- **Flora**: **Mangrove species, casuarinas, and grasses** like the indigo bush.
- **Fauna**:
  - Bhitarkanika has one of the **largest populations of endangered**

saltwater crocodiles in India.

- The **Gahirmatha Beach, which forms the boundary** of the park in the east, is the **largest colony of the Olive Ridley Sea Turtles**.
- Other mammals include **monkeys, jackals, common langurs, otter, sambar** deer, jungle cats, fox, Mongoose, wolfs, fishing cats, hyenas, etc.

Saltwater crocodile

- Saltwater crocodiles, or **estuarine crocodiles,** are enormous creatures and the **world's largest living reptiles.**
- **Scientific name: Crocodylus porosus**
- **Distribution**: It **inhabits brackish waters of wetlands and marine intertidal environments** from **Sri Lanka, India, Bangladesh**, and Myanmar east to the Solomon Islands and Vanuatu and south to Australia's northern coast.
- **Features**:
  - The **average male is 5m in length** and **weighs around 500kg,** while **females are significantly smaller.**
  - They are **nocturnal hunters.**
  - The species is **known for its aggressive nature**, as shown by numerous attacks on people and livestock each year.
- **Conservation Status**:
  - **IUCN: Least Concern**

Hindu Kush Himalayas are changing. Ramp up adaptation, urges ICIMOD

Hindu Kush Himalayas

- The Hindu-Kush-Himalayan (HKH) region encompasses Afghanistan, Bangladesh, Bhutan, China, India, Kyrgyzstan, Mongolia, Myanmar, Nepal, Pakistan, Tajikistan, and Uzbekistan.
- It is considered the **Third Pole** (after the North and South Poles) and has significant implications for climate.
- It contains the largest volume of ice and snow outside of the Arctic and Antarctica.
- The ice and snow from this region are **an important source of water** for 12 rivers that flow through 16 countries in Asia.

International Centre for Integrated Mountain Development (ICIMOD)

- It is an **intergovernmental knowledge and learning centre** working on behalf of the people of the Hindu Kush Himalaya (HKH).
- It is based in Kathmandu, Nepal.
- It works for eight regional member countries – Afghanistan, Bangladesh,

Bhutan, China, India, Myanmar, Nepal, and Pakistan.

- **Functions**
  - It serves the region through **information and knowledge generation** and sharing to find innovative solutions to critical mountain problems.
  - It bridges science with policies and on-the-ground practices.
  - It provides a regional platform where experts, planners, policymakers, and practitioners can exchange ideas and perspectives towards the achievement of sustainable mountain development.

Blackbucks are fighting for survival in Punjab

Abohar wildlife sanctuary

- It is located in the **state of Punjab.**
- The entire area of **Sanctuary is private or community** owned land of 13 Bishnoi villages.
- **Flora:** Albizia lebbeck, Acacia nilotica, Azadirachata indica, A. tortilis etc.
- **Fauna:** Wild Boar, Blue Fauna Bull, Porcupines, Hare, Jackal, etc.

Blackbuck

- It is the sole extant member of the genus **Antilope found in India.**
- It lives mainly in open **grasslands or dry deciduous forests.**
- The antelope is native to and found mainly in India (with a small population in Nepal and Pakistan).
- It is widespread in the states of Rajasthan, Gujarat, Madhya Pradesh, Tamil Nadu, Odisha, and other areas throughout peninsular India.
- It has been declared as the **state animal** by the governments of **Punjab, Haryana and Andhra Pradesh.**
- **Conservation status:**
  - **IUCN Red List**: Least concerned.
  - **Wildlife Protection Act of 1972**: Schedule I
  - **CITES**: Appendix III

Debrigarh Wildlife Sanctuary of Odisha records higher prey density

- It is located between the **Hirakud Dam (Mahanadi River)** and the Reservoir in the **state of Odisha.**
- It was declared a wildlife sanctuary in 1985.
- It finds a special mention because of noted freedom fighter Veer Surendra Sai.
- During his rebellion against the British **Veer Surendra Sai made** his base at 'Barapathara" located within the sanctuary.

- **Fauna:** The beautiful sanctuary is known for its easy sightings of animals particularly Indian Bison, Wild Boars and Sambhar etc.
- **Flora:** It has a dry deciduous forest that attracts a host of birds during the winters.

Debrigarh 48 initiative

- The wildlife division had launched the '**Debrigarh 48' initiative** to prevent villagers from **harming the wildlife and collect intelligence** from the periphery landscape through them.

Hirakud Dam

- It is a composite structure of earth, concrete and masonry. It is the **longest major earthen dam in India.**
- It is one of the first **major multipurpose river valley projects** started after India's independence and began operations in 1957.

Bhopal: 20 White-Rumped Vultures Brought From Haryana

- It is a **medium-sized Old-World vulture**.
- **Scientific name: Gyps bengalensis**
- It is also known as **Indian White-backed Vulture** or **Oriental White-backed Vulture**.
- **Distribution**: **Pakistan, India, Bangladesh, Nepal**, Bhutan, Myanmar (Burma), Thailand, Laos, Cambodia, and southern Vietnam.
- **Habitat**: Found mostly in **plains and less frequently in hilly** It can also be **seen in villages and cities** near to cultivation.
- **Population**:
    - In the 1980s, the global population was estimated at several million individuals, and it was thought to be "the most abundant large bird of prey in the world".
    - **As of 2021**, the global population was **estimated at less than 6,000 mature individuals.**
- **Features**:
    - It is a typical, **medium-sized vulture**, with an **unfeathered head and neck**, very **broad wings**, and **short tail feathers**.
    - Adults are **75 to 85 cm tall**, their **wing span is 180 to 210 cm**, and their **weight ranges from 3.5 to 7.5 kg**.
    - The **sexes are approximately equa**l in size.
    - **Adults are darker** than juveniles, **with blackish plumage**, a **white neck-ruff**, and a **white patch of feathers on the lower back** and upper

tail, from which their common name is derived.
    - There is a **pale grey patch on the upper surface of the wings**, visible when the wings are folded. The **undersides of the wings are a dark slate to brownish colour**.
- **Conservation Status:**
    - **IUCN: Critically Endangered**
    - **Wildlife Protection Act 1972: Schedule-1**

Over 6,500 Live Turtles Seized At Tamil Nadu Airport, 2 Arrested

Red-eared sliders turtle

- It is **native** to the southeastern **USA and Mexico.**
- It is a semi-aquatic turtle from **fresh and brackish water ecosystems**.
- It spends the majority of its time either in the water foraging or basking on rocks and logs.
- The species is considered one of the world's **100 worst invasive non-native** species.
- **Appearance**
    - It is known for its distinct **red stripes behind each ear.**
    - They range in colour from dark green to brown, with yellowish ribbons all over their green bodies and along the edge of their dark olive-green shell.
- In the wild, red sliders **can live from 20 to 50 years.**
- **Diet:** These are fed mainly on plants and small animals, such as crickets and fish etc.
- **Conservation status**
    - **IUCN: Least Concern**

New species of 'jumping spider' found in Goregaon

Hasarius Mumbai

- It is a **newly discovered species of jumping spider.**
- These are spiders who, **instead of trapping their prey in a web**, **stalk and hunt them by pouncing.**
- It has **multiple eyes that give a 360-degree view** of its surroundings and **a bulbous body covered in hair.**
- The **word 'Hasarius' refers to a genus that ranks the species — of 'jumping spiders'** in the 'salticidae' family.
- This **genus, first discovered in the year 1826**, **occurs primarily in warm**

climates.

- **In India**, there are **only two other Hasarius species** which **have been documented**, **namely H. Adansoni,** which is **found across the country,** including in urban areas, and **kjellerupi,** which was **documented from the Nicobar Islands.**

Bombay Natural History Society (BNHS):

- It is a **Non-Governmental Organisation** in India **engaged in conservation and biodiversity research.**
- BNHS has been **designated as a 'Scientific and Industrial Research Organisation'by** the **Department of Science and Technology.**
- BNHS is the **partner of BirdLife International in India**. BirdLife International is a global partnership of conservation organisations that strives to conserve birds, their habitats and global biodiversity. It is headquartered in Cambridge, UK.
- **Headquarters**: BNHS is headquartered in the specially constructed **'Hornbill House' in southern Mumbai.**
- The BNHS **logo is the great hornbill.**

Birders catch rare glimpse of seabirds in onshore regions of Gujarat

Pelagic Birds

- These are **seabirds that live on open seas and oceans rather than inland** or around more restricted waters such as lakes and rivers.
- They can be **found thousands of miles offshore** but can **get blown onto land during high winds a**nd storms.
- The **only other time they come inland is to breed.**
- The most familiar **types of pelagic birds include albatrosses, frigatebirds, fulmars**, petrels, shearwaters, and tropicbirds.
- **Features**:
    - They **feed on planktonic crustaceans and squid** and hunt fish far from the land.
    - Generally, they have **dense, waterproof feathers** and **layers of fat to keep them warm.**
    - They have **exceptionally long and thin wings** that allow them **to fly effortlessly for long periods** without rest.
    - Many pelagic birds **have special salt glands**. This allows them to drink seawater and **discard extra salt** accidentally ingested by their oceanic prey.
    - Some **have webbed or partially webbed feet for swimming**, plucking

fish from the shallows, or executing precise, plunging dives.

- In general, **seabirds live longer than other wild birds**; most have an average lifespan of 50 years.
- Almost all seabirds **live in colonies, migrate annually, and mate for life.**

Indian farmers should prepare for decreased rainfall conditions due to El Nino

- India may see decreased rainfall conditions due to the likely occurrence of an El Nino event this year, according to the United Nations' atmospheric science agency, the World Meteorological Organization (WMO).
- The warming effect of the phenomenon will likely add to the heating effect due to the emissions of greenhouse gases and witnessing erratic rainfall pattern.
- Indian farmers should not wait for the declaration of an El Nino event in the equatorial Pacific Ocean and should take steps to adapt to the possibility, according to a WMO official.
- El Nino is the warming phase of the **El Nino Southern Oscillation phenomenon** during which the sea surface temperatures of the central and eastern equatorial Pacific Ocean become warmer by 0.5 degrees Celsius or more in a particular region of the equatorial Pacific Ocean known as the Nino 3.4 region.
- Most forecasts indicate an El Nino during the season, which may enhance the flood-drought cycle that is already being witnessed in the country, he said.
- Scientists have observed an expansion of the regions in which the ENSO phenomenon has its impacts and also an increase in humidity levels; hence, the intensification of rains due to global warming
- The El Nino warming will be in addition to the heating effect due to greenhouse gas emissions in the atmosphere.
- There were three years of La Nina, which provided a cooling effect, temporarily slowing down the warming engine of the planet. Even then, we saw high temperatures and heatwaves all around the world in the past few years.
- Looking at the last three decades, La Nina events are becoming warmer than in the past. So if we are expecting the event to slow down the global temperature rise, that is not going to happen much anymore
- The India Meteorological Department (IMD) has not declared the development of an El Nino event, but it has been anticipating its occurrence, which could be crucial for the current monsoon season.
- In an El Nino year, the monsoon season is generally shorter and weaker than normal. Many El Nino years have resulted in droughts for the country.

- El Ninos are only declared by **NOAA** when it forecasts that the warming would stick around for the next several months and seasons and there are related changes in the atmosphere such as the increase in rainfall over central Pacific Ocean and decrease in rainfall over Indonesia.
- Between 0.5°C and 0.9°C, the event is categorised as a weak event. Between 1 and 1.4°C, it becomes a moderate event and strong event between 1.5 and 1.9°C. When the sea surface temperatures go above 2°C, a very strong event is declared.
- The monsoon system and the rains over India have picked up pace with considerable intensity since June 25 in most parts of India. Just before that, the monsoon had been sluggish, which had resulted in heatwaves in most parts of central and eastern India.
- **El Nino and La Nina** are complex weather patterns resulting from variations in ocean temperatures in the Equatorial Pacific Region. They are opposite phases of what is known as the **El Nino-Southern Oscillation (ENSO)** cycle.
    - The ENSO cycle describes the fluctuations in temperature between the ocean and atmosphere in the east-central Equatorial Pacific.
    - El Nino and La Nina episodes typically last nine to 12 months, but some prolonged events may last for years.
- **El Nino** is a climate pattern that describes the **unusual warming of surface waters** in the **eastern tropical Pacific Ocean.**
    - It is the "warm phase" of a larger phenomenon called the El Nino-Southern Oscillation (ENSO).
    - It occurs more frequently than La Nina.
- **La Nina, the "cool phase"** of ENSO, is a pattern that describes the **unusual cooling** of the tropical eastern Pacific.
    - La Nina events may last between **one and three years, unlike El Nino,** which usually lasts no more than a year.
    - **Both phenomena tend to peak during the Northern Hemisphere winter.**

El Nino

- El Nino was **first recognized by Peruvian fishermen** off the coast of Peru as the appearance of unusually warm water.
    - The Spanish immigrants called it **El Nino, meaning "the little boy"** in Spanish.
- El Nino soon came to describe irregular and intense climate changes rather than just the warming of coastal surface waters.
- The El Nino event is **not a regular cycle,** they are not predictable and occur

irregularly at two- to seven-year intervals.
    - The climatologists determined that El Nino occurs simultaneously with the Southern Oscillation.
        - The Southern Oscillation is a change in air pressure over the tropical Pacific Ocean.
- When coastal waters become warmer in the eastern tropical Pacific (El Nino), the atmospheric pressure above the ocean decreases.
    - Climatologists define these linked phenomena as **El Nino-Southern Oscillation (ENSO).**

Monitoring El Nino and La Nina

- Scientists, governments, and non-governmental organizations (NGOs) collect data about El Nino using a number of technologies such as **scientific buoys.**
    - A buoy is a type of an **object that floats in water** and is used in the middle of the **seas as locators or as warning points for the ships.** They are generally bright (fluorescent) in colour.
    - These buoys measure ocean and air temperatures, currents, winds, and humidity.
    - The buoys transmit data daily to researchers and forecasters around the world enabling the scientists to more accurately predict El Nino and visualize its development and impact around the globe.
- The **Oceanic Nino Index (ONI)** is used to measure deviations from normal sea surface temperatures.
    - The intensity of El Nino events varies from weak temperature increases (about 4-5° F) with only moderate local effects on weather and climate to very strong increases (14-18° F) associated with worldwide climatic changes.

Oceanic Nino Index (ONI)

- The **Oceanic Niño Index (ONI),** is a measure of the departure from normal sea surface temperature in the east-central Pacific Ocean, is the standard means by which each El Nino episode is determined, gauged, and forecast.

Impact of El Nino

- In order to understand the concept of El Nino, it's important to be familiar with non-El Nino conditions in the Pacific Ocean.
    - Normally, **strong trade winds blow westward** across the tropical Pacific, the region of the Pacific Ocean located between the **Tropic of Cancer and the Tropic of Capricorn.**
- **Impact on Ocean:** El Nino also impacts ocean temperatures, the speed and strength of ocean currents, the health of coastal fisheries, and local weather

from Australia to South America and beyond.

- **Increased Rainfall:** Convection above warmer surface waters brings increased precipitation.
    - Rainfall increases drastically in South America, contributing to coastal flooding and erosion.
- **Diseases caused by Floods and Droughts:** Diseases thrive in communities devastated by natural hazards such as flood or drought.
    - El Nino-related flooding is associated with increases in cholera, dengue, and malaria in some parts of the world, while drought can lead to wildfires that create respiratory problems.
- **Positive impact:** It can sometimes have a positive impact too, for example, El Nino reduces the instances of hurricanes in the Atlantic.
- **In South America:** As El Nino brings rain to South America, it brings droughts to Indonesia and Australia.
    - These droughts threaten the region's water supplies, as reservoirs dry and rivers carry less water. Agriculture, which depends on water for irrigation, is also threatened.
- **In Western Pacific:** These winds **push warm surface water** towards the western Pacific, where it borders **Asia and Australia.**
    - Due to the warm trade winds, the sea surface is normally about **0.5 meter higher** and **4-5° F warmer in Indonesia than Ecuador.**
    - The westward movement of warmer waters causes **cooler waters to rise up** towards the surface on the coasts of **Ecuador, Peru, and Chile.** This process is known as **upwelling.**
        - Upwelling elevates cold, nutrient-rich water to the euphotic zone, the upper layer of the ocean.

Previous El Nino Events:

- El Nino events of **1982-83 and 1997-98** were the **most intense** of the 20 century.
- During the **1982-83** event, sea surface temperatures in the eastern tropical Pacific were 9-18° F above normal.
- The El Nino event of **1997-98** was the first El Nino event to be **scientifically monitored from beginning to end.**
- The 1997-98 event produced drought conditions in Indonesia, Malaysia, and the Philippines. Peru and California experienced very heavy rains and severe flooding.
- The Midwest experienced record-breaking warm temperatures during a period

known as **"the year without a winter."**

La Nina

- La Nina means The Little Girl in Spanish. It is also sometimes called El Viejo, anti-El Nino, or simply "a cold event."
- La Nina events represent periods of **below-average sea surface temperatures** across the **east-central Equatorial Pacific.**
    - It is indicated by sea-surface temperature decreased by more than 0.9°F for at least five successive three-month seasons.
- La Nina event is observed when the **water temperature in the Eastern Pacific gets comparatively colder than normal,** as a consequence of which, there is a **strong high pressure over the eastern equatorial Pacific.**

The Conditions of La Nina.

- La Nina is caused by a build-up of **cooler-than-normal waters in the tropical Pacific,** the area of the Pacific Ocean between the Tropic of Cancer and the Tropic of Capricorn.
- La Nina is characterized by **lower-than-normal air pressure over the western Pacific.** These low-pressure zones contribute to increased rainfall.
- La Nina events are also associated with **rainier-than-normal conditions** over **southeastern Africa and northern Brazil.**
    - However, strong La Nina events are associated with catastrophic floods in northern Australia.
- La Nina is also characterized by **higher-than-normal pressure** over the **central and eastern Pacific.**
    - This results in decreased cloud production and rainfall in that region.
- **Drier-than-normal conditions** are observed along the **west coast of tropical South America,** the **Gulf Coast of the United States,** and the **pampas region of southern South America.**

Impact of La Nina

- **Europe:** In Europe, El Nino reduces the number of autumnal hurricanes.
    - La Nina tends to lead to **milder winters in Northern Europe** (especially UK) and colder **winters in southern/western Europe** leading to snow in the Mediterranean region.
- **North America:** It is continental North America where most of these conditions are felt. The wider effects include:
    - **Stronger winds along the equatorial region,** especially in the Pacific.
    - **Favourable conditions for hurricanes** in the Caribbean and central Atlantic area.

- **Greater instances of tornados** in various states of the US.
- **South America:** La Nina causes **drought in the** South American countries of **Peru and Ecuador.**
  - It usually has a **positive impact on the fishing industry** of western South America.

- **Western Pacific:** In the western Pacific, La Nina increases the **potential for landfall** in those areas most vulnerable to their effects, and especially into **continental Asia and China.**
  - It also leads to **heavy floods in Australia.**
  - There are **increased temperatures** in Western Pacific, Indian Ocean and off the Somalian coast.

La Nina in 2010

- The 2010 La Nina event correlates with one of the worst floods in the history of Queensland, Australia.
- More than 10,000 people were forced to evacuate, and damage from the disaster was estimated at more than $2 billion.

ENSO and India

- **El Nino:** Strong El Nino events contribute to weaker monsoons and even droughts in India Southeast Asia.
- **La Nina:** The cold air occupies a larger part of India than the El Nino cold air.
- In the 'La Nina year', **rainfall associated with the summer monsoon** in Southeast Asia tends to be **greater than normal,** especially in **northwest India and Bangladesh.**
  - This generally **benefits the Indian economy,** which depends on the monsoon for agriculture and industry.
- It usually brings in **colder than normal winters** in India.
- La Nina influences the Indian subcontinent by piping in **cold air from Siberia and South China,** which interacts with the tropical heating to produce a north-south low-pressure system.
- The **cold air of La Nina** associated with this north-south trough **tends to extend much further south into India.**
  - This is remarkably different from the more northwest-southeast blast of cold air associated with El Nino.
  - The pressure pattern going north-south means lesser impact of western disturbances.
  - The **cold temperature can go down as far as Tamil Nadu,** but **may not affect the North East that much.**

Study shows growing zone of active tectonic deformation in northern Haryana plains south of Himalayas

- The piedmont zone of Haryana is actively deforming and could become a future seismic hazard zone, we found out in new research. Piedmont plains are situated at the foot of mountains or hills.
- In fact, the active tectonics and geodynamic framework of the area may have played a role in the extinction of the **Vedic Saraswati river** that once flowed through the region.
- The study focused on the piedmont alluvial plains and covered parts of Panchkula, Ambala and Yamunanagar districts in Haryana and Mohali district in Punjab. There are signs of active tectonic deformations in the piedmont alluvial plains of northern Haryana.
- The convergence between the Indian tectonic plate and Eurasian plate resulted in the lifting of the Himalayan mountain belt. Along with the southward movement of the deformation front, the convergence also resulted in a significant shortening of the lithosphere.
- Some postulations suggest an active deformation is propagating further south of the Himalayan front. These deformations may be reaching the 10- to 25-kilometre-wide piedmont zone of the Indo-Gangetic alluvial plains.
- The piedmont zone of the present study area lies in seismic zone IV in the zonation map of India.
- The tectonically controlled evolution of the region's landscape was further proven by characteristics like the debouching of the Ghaggar and Yamuna tributaries and seasonal streams into the piedmont zone from the Siwalik.
- We concluded that the piedmont alluvial zone of the Himalayan foreland basin is actively deforming. Paleoseismic investigations through trenching are also needed to understand stress partitioning in the region.

Invasion of Whitefly takes toll on coconut trees in Pune

- These are **winged insects that have soft bodies** and are closely related to aphids.
- These are tiny, sap-sucking insects that may become abundant in vegetable and ornamental plantings, **especially during warm weather**.
- It is **naturally distributed** in Belize, Guatemala, and Mexico (Martin, 2008), and subsequently, it has spread to 22 other countries in Central and South America.
- It mainly **infests coconut palms and other broad-leaved hosts** in its native range

- It is an **invasive insect.**

How the insect attacks

- The whitefly starts **attacking the lower leaves** of the coconut palm.
- It drains the sap from the underside of the leaf, producing a significant amount of honeydew, which settles on the upper surface of the next lower leaf, leading to the growth of black, sooty mould.
- This is the secondary infection from the whitefly infestation.
- It has a serious **impact on the production of coconut.**
- Not only does it **reduce the size of the coconut, but** it also decreases the coconut's water content.

Hyenas inherit power from moms, but it's a privilege they pay dearly for: Study

Hyenas

- Hyenas are **doglike carnivores** found in **Asia and Africa** and are noted for their **scavenging habits**.
- **Family: Hyaenidae**
- There are **three hyena species — spotted** (Crocuta Crocuta), **brown** (Arahyaena brunnea), **and striped** (Hyaena hyaena). **Spotted hyenas are the largest** of the three.
- **Habitat**: **Forest edges, grasslands, savannas**, sub-deserts, and even mountains at an elevation of about 13,000 feet.
- **Distribution**: These animals live throughout **Africa, the Middle East, and parts of Asia**.
- **Features**:
    - They are four-legged animals with **scraggly fur and large ears**.
    - They have **long forelegs** and a **powerful neck and shoulders** for dismembering and carrying prey.
    - They are **tireless trotters with excellent sight, hearing, and smell** for locating carrion, and they are proficient hunters as well.
    - All hyenas are more or less **nocturnal**.
    - These animals usually **live for about 12 years**, but they can **live up to 25 years**. Brown hyenas, however, typically have shorter lives.
- **Conservation Status:** According to IUCN, **Spotted Hyena** populations are of **least concern**. However, **brown and striped hyenas are classified as near threatened**.

DP World provides thermal drones to Tadoba-Andhari Tiger Reserve to protect

wildlife and intensify surveillance

Tadoba-Andhari Tiger Reserve

- **Location**: It is located in the **Chandrapur district of Maharashtra**.
- The origin of the **name "Tadoba"** lies with the **name of the God "Tadoba"** or "Taru", **worshiped by the tribes** who live in the dense forests of the Tadoba and Andhari regions. While "**Andhari" refers to the Andhari River that meanders through the forest**.
- The **total area** of the reserve **is 625.4 square kilometers.** This **includes Tadoba National Park**, covering 116.55 sq. KM, **and Andhari Wildlife Sanctuary** of 508.85 sq. KM.
- **Corridor**: The reserve **has corridor linkages with Nagzira-Navegaon** and **Pench Tiger Reserves** within the State.
- **Habitat**: Biogeographically, the reserve falls in the **Central Plateau Province of the Deccan Peninsula**, with **tropical dry deciduous forests** and a typical Central Indian faunal assemblage.
- **Flora**:
    - **Teak is the dominant** tree species.
    - Other major tree species **include Ain, Bamboo, Bija, Dhaoda**, Haldu, Salai, Semal and Tendu.
    - **Along the moist areas**, species like **Mango, Jamun and Arjun** are found.
- **Fauna**:
    - The notable faunal species include **tiger, leopard, sloth bear, wild dog,** gaur, chital, and sambar.
    - As many as **280 species of birds** are found, apart from **reptiles (54 species**), **amphibians (11 species**) and fishes (84 species).

Sustainable fishing sorely needed to save sharks off India's coastline

- In the coastal town of Kakinada in Andhra Pradesh, In fish market spadenose sharks. Listed as "near threatened" in the International Union for Conservation of Nature Red List of Threatened Species, its population has been declining the world over. A bit further on, we find silky sharks, listed as "vulnerable" on the Red List. This part of coastal Andhra Pradesh is known for landing shark species, big and small.
- India is the third largest shark-producing nation in the world according to a 2019 report by TRAFFIC, an organisation that monitors wildlife trade for data collection, analysis, and to make trade recommendations.
- As many as 10 species of sharks and rays are protected under the Wild Life

(Protection) Act (WLPA), 1972, with more species added in the amendments to the Act in 2022. Thus, shark fishing per se is not illegal in India, only catching species listed in the Act. Given that these are slow growth species, sustainable harvesting from the ocean is vital to ensure their populations remain stable.

- Most of the shark species we find at the landing centre in Kakinada are listed as "near threatened" or "vulnerable to extinction" or "endangered". And there is a reason for this. Sharks are what biologists define as "**K-selected**" species, which means they give birth to only a few young after a long gestation. They grow slowly and reach sexual maturity late. This is why harvests of shark and ray species for fisheries can quickly become unsustainable if not regularly monitored.

Brazil GEF meet: Over half a billion dollars set aside for work on biodiversity

Global Environment Facility (GEF)

- It was established on the **eve of the 1992 Rio Earth Summit** of UNFCC to help tackle our planet's most pressing environmental problems.
- It is a family of funds dedicated to confronting biodiversity loss, climate change, pollution, and strains on land and ocean health.
- It provides financial assistance for five major international environmental conventions:
    - The **Minamata Convention** on Mercury.
    - The **Stockholm Convention** on Persistent Organic Pollutants (POPs).
    - The United Nations **Convention on Biological Diversity** (UNCBD)
    - The United Nations **Convention to Combat Desertification** (UNCCD).
    - The United Nations Framework Convention on Climate Change (UNFCCC).
- It has **184 member countries, including India.**
- The **governing council** is the main governing body of GEF which comprises 32 members appointed by constituencies of GEF member countries (14 from developed countries, 16 from developing countries, and two from economies in transition).
- Its secretariat is based in **Washington, D.C.**

Groundwater extraction shifted the Earth's axis: What a new study says

- The excessive extraction of groundwater for drinking and irrigation has shifted the Earth's axis of rotation, according to a new study. The planet's axis has drifted at the rate of 4.36 cm per year towards the east.
- Although the shift isn't significant enough to have real-life consequences, the

study shows that humans have extracted so much water from the ground that it has impacted the planet's axis and contributed to **global sea level rise**.

Earth's axis keeps shifting

- Earth spins around an imaginary axis which passes through the north pole, its centre of mass and the south pole — just like a top spins around its spindle. Scientists for years have known that the poles and the axis keep shifting naturally as the mass distribution in and on the planet changes. This phenomenon is known as "polar motion".
- For instance, rocks slowly circulating inside Earth's mantle causes the planet's mass to shift, leading to a change in the position of the rotational axis, that the shift of the axis, in fact, "varies about several metres in a year."
- There are several other reasons responsible for polar motion like **ocean currents and even hurricanes.** But this phenomenon is also impacted by human activities. In 2016, a team of researchers demonstrated that climate-driven changes in water mass distribution, led by the **melting of glaciers and ice in Greenland**, can cause Earth's axis to drift. Five years later, another study said climate change was causing the rotational axis to shift more than usual since the 1990s.
- They calculated variations of the spin axis using many kinds of data including atmospheric pressure, ocean bottom pressure, artificial reservoirs behind dams, polar ice, mountain glacier, wind, current and finally groundwater. The estimated spin axis variations didn't agree with the observation when excluding the groundwater effect. After including it, estimation agreed really well with observation, adding that the redistribution of groundwater was found to be the largest contributor to the drift of the rotational pole.
- The water sucked out from the ground for irrigation and meeting the world's freshwater demands, eventually, goes into the oceans. Seo and his team confirmed that groundwater extraction is one of the major contributors to the **global sea level rise**.

Leatherback, the world's largest sea turtle, makes a rare appearance in Visakhapatnam

The leatherback turtle is a stray record. It is unusual to spot the species in this coast. The leatherbacks are normally seen in the **Andaman and Nicobar Islands** where they come in groups. However, there are no mass nesting sites here as in the case of Olive Ridleys.

- The leatherback is the largest sea turtle in the world, weighing up to 700 kilograms and measuring up to six-and-a-half feet as adults.
- Leatherbacks have been viewed as unique among extant reptiles. They are able

to maintain high body temperatures using metabolically generated heat.

- It is found in all oceans except the Arctic and the Antarctic, Within the Indian Ocean, they nest only in Indonesia, Sri Lanka, and the Andaman and Nicobar Islands.
- It is the only living species in the genus Dermochelys and family Dermochelyidae. It is differentiated from other modern sea turtles by its lack of a bony shell.
- The species is currently listed as **threatened** in the Red List of International Union for Conservation of Nature (IUCN), **Wildlife Protection Act,1972:** Schedule I
- According to US-based National Oceanic Atmospheric Administration, its global population is said to have declined 40% over the past three generations.
- Loss of nesting sites is one of the key threats to the turtles' survival, the IUCN states. The turtles also face threat from fishing activities, other human-induced issues like egg collection for consumption, and ingestion of plastic waste.

Iraq plants mangrove forest to fight climate disaster

Iraq's carbon emissions have more than doubled over the past decade making it one of the region's worst polluters when measured against the size of its economy

Mangroves

- Mangrove is a tropical tree thriving near the coastline in brackish water.
- Mangroves are salt tolerant trees, also called halophytes.
- They are adapted to the low oxygen (anoxic) conditions of waterlogged mud.
- These trees cannot survive in colder temperatures.
- They have tangled prop roots that allow the trees to survive the daily tides and capture sediments while slowing waterflow.

How do mangroves help in fighting climate disaster

Carbon sinks

- **Net zero carbon emissions** Since mangroves store carbon from the atmosphere at up to 4 times the rate of terrestrial forests, they are indispensable in achieving the goal of net zero carbon emissions.
- **Soil carbon accumulation**Dead mangroves decompose very slowly due to waterlogging in the soil, making the soil carbon accumulation last for hundreds of years.
- Indonesia, Brazil, Nigeria, Australia and Mexico hold 50% of the total world mangrove carbon, mainly due to their large mangrove areas.

Ecosystem services

- Mangroves support interconnected terrestrial, freshwater, and marine habitats.
- **Capture sediments** - The roots of mangrove trees capture sediments, resulting in the formation of new, fertile lands.
- **Aquatic life** - While mangrove creeks provide safe grounds for young fish, they simultaneously provide rich feeding areas for predatory fish.

Disaster risk reduction

- **Coastal protection** - Mangroves stabilise coastlines by holding sediments together.
- They also act as safety nets against storms and surges.
- In tropical coastal areas, mangroves are the first line of defence against natural disasters like cyclones and hurricanes that originate in seas and oceans and impact land.
- **Prevents erosion** - Mangrove trees act as a buffer zone and arrest winds, slowing them down and hence minimising impact on land.

Socio-economic importance

- **Economic and food security** - Mangrove ecosystems are home to a variety of fish thus providing a critical source of jobs and protein to local, coastal communities.
- **Source of revenue** - Mangroves are also important resources for timber and fuelwood, when collected sustainably.
- **Promotes biodiversity** - Mangroves are extremely rich in biodiversity housing several threatened or endangered species.
    - In India, mangroves found in the Sunderbans shelters the Royal Bengal Tiger, fishing cats, macaques, leopard cats, wild boar, flying fox, pangolin, and Indian grey mongoose.
- **Promotes tourism** - The biodiversity hotspot attracts thousands of visitors every year, generating valuable revenue.

Deep-sea mining will be 25 times as bad as mining on land

Extracting minerals from the ocean floor could negatively impact biodiversity on a scale of up to 25 times greater than land-based mining, and fixing the damage would cost twice as much as extraction.

A search for alternatives to fossil fuels has driven demand for materials that go into batteries, some of which can be found on the seabed where ecosystems have yet to be fully explored.

Deep-sea mining would extract cobalt, copper, nickel, and manganese from potato-sized nodules which pepper the sea floor at depths of 4-6 kilometres. The nodules are an essential habitat for many species.

The nodules... take millions of years to form, which warned resulting biodiversity loss could be permanent. Advocates say deep sea ecosystem restoration, such as installing artificial clay nodules to replace those lost, could mitigate these impacts.

Seabed mining in international waters cannot start until the **International Seabed Authority (ISA)**, a Jamaica-based U.N. body, decides on regulations expected by July.

Major types of deep-sea mining

- **Manganese nodule mining:** This involves collecting nodules of manganese, iron, and other metals that are scattered on the ocean floor.
- **Seafloor massive sulphide (SMS) mining**: This involves extracting mineral deposits formed near hydrothermal vents, which can contain high concentrations of copper, zinc, and other metals.
- **Cobalt crust mining**: This involves collecting crusts of cobalt, nickel, and other metals that form on the surface of seamounts.

Clarion-Clipperton Zone (CCZ)

It is a region spanning 5,000 kilometres (3,100 miles) across the central Pacific Ocean at depths of 4,000 - 5,500 metres.

- It is a habitat for cetaceans, including baleen (mysticetes) and toothed whales (odontocetes).
- Up to 30 cetacean populations, including globally endangered species like blue whales, can be found in the CCZ, where 17 exploratory deep-sea mining licenses have already been granted.

India's largest radio telescope key to detecting the universe's vibrations

- India's Giant Metrewave Radio Telescope (GMRT) was one of the world's six large telescopes that played a key role in finding the first direct evidence for the relentless vibrations of the fabric of the universe, caused by ultra-low frequency gravitational waves.
- Such waves are expected to originate from a large number of dancing monster black hole pairs, several million times heavier than the Sun
- The 100-m Effelsberg radio telescope in Germany, the Lovell Telescope of the Jodrell Bank Observatory in the United Kingdom, the Nancay Radio Telescope in France, the Sardinia Radio Telescope in Italy and the Westerbork Synthesis Radio Telescope in the Netherlands were used for observations.

Giant Metrewave Radio Telescope (GMRT)

- It is an array of **thirty** fully steerable parabolic radio telescopes of 45 meter diameter.
- It functions at the meter wavelength part of the radio spectrum because man-made radio interference is considerably lower in this part of the spectrum in

India and there are many outstanding astrophysics problems which are best studied at meter wavelengths.

- Its design is based on the `**SMART**' concept - for Stretch Mesh Attached to Rope Trusses.
- National Centre for Radio Astrophysics - Tata Institute of Fundamental Research, (NCRA-TIFR), Pune

Gravitational Lensing

- It is a phenomenon in which the light emitted by the source is **bent due to the presence of another massive body**, such as an early type elliptical galaxy, between the target galaxy and the observer, effectively resulting in the magnification of the signal.
- It **probes** the distribution of matter in galaxies and clusters of galaxies, and enables observations of the **distant universe.**
- It allows researchers to **study the details of early galaxies** too far away to be seen with current technology and telescopes.

Geographical Indication tag sought for Andhra Pradesh Red Sanders

The Andhra Pradesh forest department represented by Principal Chief Conservator of Forest & Head of Forest Force have submitted an application seeking geographical indication (GI) tag for the famous Andhra Pradesh Red Sanders.

Red sanders

- Red sanders (Pterocarpus *santalinus)* is a native and endemic to India and can only be found in the Southern parts of the Eastern Ghats.
- Red Sanders usually grow in the rocky, degraded and fallow lands with Red Soil and hot and dry climate.
- It is a small tree that grows to 5-8 meters in height with a trunk 50-150 cm diameter.
- The geographical area of red sanders include Chittoor, Tirupati, Annamayya, Nandyal, Prakasham and Nellore.
- **IUCN Red List**: Endangered.
- **CITES:** Appendix II
- **Wildlife (Protection) Act 1972:** Schedule II

There is a huge demand for this timber in the domestic and international market, especially in East Asian Countries. Red Sanders timber is used for carvings. furniture, poles, and house posts. The rare “wavy” grain variant is highly valued in Japan for its acoustic properties and is used to make musical instruments.

In addition, the timber is also exploited for the extraction of **Santalin** (a red pigment used as dye and colorant in food), medicine and cosmetics.

Its IUCN red list status is "**endangered**". Details provided in the application that was filed shows that it was later re-classified to near threatened in 2018, as the scale of this loss is not properly known.

Transponders to be installed in sea vessels across India's coastal areas to protect marine life

- The central government has decided to instal transponders — wireless tracking devices that use radio frequencies — on approximately 100,000 vessels in all coastal states and Union territories in India in collaboration with the state governments.
- The project has been approved on the request of Odisha government and in consultation with coastal states and UTs.
- The devices will help the vessels avoid sea creatures that suffer injuries coming in contact with boats and fishing trawlers. A prominent example is the case of the **Olive Ridley sea turtles**, an **endangered** species, that visit the beaches in Odisha in the millions to nest.
- The affidavit stated that the project will be implemented under the Pradhan Mantri Matsya Sampad Yojana scheme with 100 per cent government funding on a **60:40 cost-sharing basis between the Centre and state.**

Pradhan Mantri Matsya Sampad Yojana scheme

- PMMSY was introduced by the Government of India, **as part of the 'Atma Nirbhar Bharat' package** with the investment of **Rs. 20,050 crores, the highest ever investment in the Fishery sector.**
- Fishermen are provided with **insurance cover, financial assistance and a facility of Kisan Credit Card as well.**
- **Aim and Objectives:**
    - PMMSY aims towards the purpose of **rural development by utilizing rural resources and boosting rural economy in a rapid way.**
    - The main motto of PMMSY is **'Reform, Perform and Transform**' in the fisheries sector.
    - The **reforms and initiatives in PMMSY scheme** have been inculcated in:
        - **Core & trunk infrastructure development**
        - **Modernization** of Indian fisheries by undertaking the efforts such as:
            - Push for **new fishing harbours/landing centres**
            - Modernisation and **mechanization of traditional fishermen crafts-trawlers-deep sea going vessels**

- Provision of **post-harvest facilities to reduce post-harvest loss**
- **Cold chains facilities**
- **Clean and hygienic fish markets**
- **Two wheelers** with ice boxes

- Achievements:
  - **Fisheries sector** showed **impressive growth of 14.3% from 2019-20 to 2021-22.**
    - Fish production reached an all-time high of 141.64 lakh tons during 2019-20 to 161.87 lakh tons during 2021-22.
    - Fisheries sector saws all-time high exports of 13.64 lakh tonnes valuing Rs 57,587 crore dominated by exports of shrimps.
    - Currently, exports to 123 countries are taking place including China, Thailand, Japan, Taiwan, Tunisia, the United States, Hong Kong, Kuwait, etc.
  - PMMSY has **supported 31.47 lakh farmers under insurance coverage from 22 states and 7 UTs.**
- Implementation:
  - It is implemented as an **umbrella scheme with two separate components namely:**
    - **Central Sector Scheme**: The project cost will be borne by the Central government.
    - **Centrally Sponsored Scheme**: All the sub-components/activities will be implemented by the States/UTs and the cost will be shared between the Centre and State.
- Forthcoming Plan:
  - **Aquaculture promotion** will be undertaken especially in the **saline and alkaline areas of Northern India.**
  - Also, focus will be laid on **Aquatic health management** involving the address of diseases, antibiotic and residue issues which will be **supported by an integrated laboratory network.**

Drongo Spotted At Hastinapur Sanctuary, Experts Cheer

Hastinapur Wildlife Sanctuary

- It is located in the state of **Uttar Pradesh.**
- It lies alongside the northern tip **of the River Ganga**, flowing thru the districts of Muzaffarnagar and Bijnor.

- It has a variety of landforms and is a mixture of different habitats such as **wetlands, marshes, dry sand beds** and gently sloping ravines.
- **Fauna:** Swamp Deer, Leopard, Wild Cats, Wild Otter, Pythons etc.
- Under Crocodile Breeding Projects, baby crocodiles are released in the Ganga River near Hastinapur.
- Under the aegis of the World-Wide Fund (WWF), the Turtle Rehabilitation Program also has its centre near the Hastinapur Sanctuary.
- It is a part **of the "Asia Flyway" project,** and many migratory Birds, both local and foreign, flock in numbers near the numerous water bodies present in the region.

Greater racket-tailed drongo

- It is a **medium-sized Asian bird which** is distinctive in having elongated outer tail feathers with webbing restricted to the tips.
- They are **diurnal** but are active well before dawn and late at dusk.
- They make a wide range of loud calls that include **perfect imitations** of many other birds.
- **Distribution in India:** The distribution range extends from the **western Himalayas** to the **eastern Himalayas** and Mishmi Hills and is also found in the hills of **peninsular India and the Western Ghats**
- **Conservation status:**
    - **IUCN:** Least Concern

DEFENCE & SPACE

North Korea spy satellite launch fails as Chollima-1 rocket falls into the sea

- North Korea's attempt to put its first spy satellite into space failed
- After an unusually quick admission of failure, North Korea vowed to conduct a second launch
- South Korea and Japan briefly urged residents to take shelter after the launch.
- The South Korean military said it was salvaging an object presumed to be part of the crashed North Korean rocket in waters 200 km west of the southwestern island of **Eocheongdo**. Later, the Defence Ministry released photos of a white, metal cylinder it described as a suspected rocket part.
- A satellite launch by North Korea is a violation of **UN Security Council resolutions** that ban the country from conducting any launch based on ballistic technology.
- The newly developed Chollima-1 rocket was launched at the North's Sohae Satellite Launching Ground in the northwest, carrying the **Malligyong-1 satellite**. The rocket crashed off the Korean Peninsula's western coast after it lost thrust following the separation of its first and second stages.

PM lauds Asia's first demonstration for Performance-Based Navigation for helicopters

GAGAN satellite technology:

- GAGAN is the acronym for **GPS Aided GEO Augmented Navigation.**
- It is jointly developed by **ISRO** (Indian Space Research Organisation) and the **Airports Authority of India (AAI).**
- It uses a system of ground stations to provide necessary augmentations to the GPS standard positioning service (SPS) navigation signal.
- Itis designed to provide the additional **accuracy, availability, and integrity necessary** to enable users to rely on GPS for all phases of flight.
- It also provides the capability for increased accuracy in position reporting, allowing for more uniform and high-quality Air Traffic Management (ATM).
- In addition, GAGAN will provide benefits beyond aviation to all modes of transportation, including maritime, highways, and railroads.
- There are **only four Space-Based augmentation systems** available in the world namely India (GAGAN), **US (WAAS,) Europe(EGNOS) and Japan (MSAS).**

Performance-Based Navigation (PBN)

- The PBN concept specifies aircraft RNAV system performance requirements in terms of **accuracy, integrity, availability, continuity and functionality** needed for the proposed operations in the context of a particular Airspace

Concept.

- This concept represents a **shift from sensor-based to performance-based navigation.**
- Performance requirements are identified in navigation specifications, which also identify the choice of navigation sensors and equipment that may be used to meet the performance requirements.

Indian Navy MARCOS Arrive In Maldives For Sixth Edition Of Exercise 'Ekatha'

Ekatha

- It is an **annual exercise** conducted between the **navies of India and Maldives.**
- **Objective**: To **enhance interoperability in diving and special operations**.

India-Maldives relation

- The **location of the Maldives**, at the intersection of commercial sea-lanes running through the Indian Ocean, **makes it strategically important for India**, particularly in the light of China's growing aggression in the region.
- India **was among the first to recognise Maldives after its independence in 1965** and to **establish diplomatic relations** with the country.
- **India established its mission at the level of CDA in 1972** and **resident High Commissioner in 1980.**
- **Maldives opened a full fledged High Commission in New Delhi in November 2004**, at that time one of its only four diplomatic missions worldwide.
- India and Maldives **signed a trade agreement in 1981**, which provides for export of essential commodities.
- **Since 1988, defence and security have been major areas of cooperation** between India and Maldives.
- **India provides the largest number of training opportunities for Maldivian National Defence Force (MNDF), meeting around 70 per cent** of their defence training requirements.
- **In 2016, the two countries also signed a comprehensive action plan to consolidate defence partnership.**
- **Exercise Ekuverin: The Indian Army and the Maldives National Defence Forces** have been conducting Exercise Ekuverin meaning 'Friends' in the Dhivehi language since 2009.

Fattah: Iran unveils its first hypersonic missile

Fattah Missile

- It is an **intermediate range ballistic missile developed by Iran.**
- It can **travel at hypersonic speeds of up to 15 times the speed of sound**

and can **penetrate missile defence system.**

- It has a **range of 1,400 kilometres** and **uses solid propellants**, allowing high **manoeuvrability.**
- This missile has the **capability to utilize various warheads for different missions.**

Hypersonic Missiles

- Hypersonic missiles travel **at speeds of at least Mach 5 — five times the speed of sound** — and can **manoeuvre mid-flight, making them harder to track and intercept.**
- Unlike conventional ballistic missiles, hypersonic ones f**ly on a trajectory low in the atmosphere, enabling them to reach their targets more quickly** and with **less chance of being intercepted** by modern air defences.

'Agni Prime' ballistic missile successfully flight-tested by DRDO off Odisha coast

Agni Prime Missile

- It is a short-range ballistic missile that will have **a range of 1000 km to 1500 km.**
- It is a surface to a surface missile that can carry a **payload of around 1,000 Kg** or a nuclear warhead.
- It incorporates new propulsion systems and composite rocket motorcasings as well as advanced navigation and guidance systems.

Ballistic missile

- Ballistic Missiles are launched **directly into the upper layers of the earth's atmosphere.**
- They travel outside the atmosphere, where the warhead detaches from the missile and falls towards a predetermined target.
- They are **rocket-propelled self-guided weapons systems** which can carry conventional or nuclear munitions. They can be launched from aircraft, ships and submarines, and land.

Army signs pact for procurement of 'tactical LAN radio'

- It is the **second contract** that the Army has firmed up **under the framework of Innovations for Defence Excellence (iDEX).**

Tactical LAN Radio

- It is a **state-of-the-art high-bandwidth backhaul wireless radio equipment** for the provisioning of **reliable and failsafe communication**.
- The LAN radio solution offers an **enhanced range of communication** and **embedded frequency hopping mechanism** to preclude chances of

interception.

- It provides **long-range point-to-multipoint high-bandwidth communication**.
- The system also incorporates **enhanced safety features** and **can operate continuously for 48 hours** on a single-set basis, without any breakdown.

iDEX (Innovations for Defence Excellence)

- It is the **flagship initiative of the Ministry of Defence (MoD),** launched in April 2018.
- **Aim**: To **achieve self-reliance and foster innovation** and technology development **in Defence and Aerospace by engaging Industries** including MSMEs, start-ups, individual innovators, R&D institutes **and academia.**
- iDEX has **partnered with leading incubators** in the country **to provide hand holding, technical support and guidance** to the winners of iDEX challenges.
- iDEX **will be funded and managed by a 'Defence Innovation Organization (DIO)'** which has been formed as a '**not for profit company**as per Section 8 of the Companies Act 2013 **by the two founder members, i.e., Defence Public Sector Undertakings (DPSUs) - HAL & BEL.**
- **iDEX will function as the executive arm of DIO**, carrying out all the required activities, while DIO will provide high-level policy guidance to iDEX.
- Under iDEX, **financial support is provided to start-ups**/MSMEs/individual innovators, **and Partner Incubators through DIO.**

Earth's neighboring star Betelgeuse unexpectedly got 50% brighter —part of a weird process that will end in the dying star going supernova

Betelgeuse

- Betelgeuse is a **red supergiant star** that forms the left shoulder of the **constellation of Orion.**
- It is **one of the brightest stars** in the night sky and **one of the largest stars ever discovered.**
- The star is approximately **650 light-years from Earth**.
- It is one of the largest known stars, measuring **more than 700 million miles (1.2 billion kilometres) in diameter**, **764 times as large as the Sun**.
- It is known for its **periodic dimming and brightening up.**

Supernova

- A supernova is the name given to the **cataclysmic explosion of a massive star.**
- They are the **largest explosion that takes place in space.**
- **A star can go supernova in one of two ways:**

- **Type I supernova**: **Star accumulates matter from a nearby neighbour** until a **runaway nuclear reaction ignites.**
- **Type II supernova: Star runs out of nuclear fuel and collapses under its own gravity.**

- It can **emit more energy in a few seconds than our sun will radiate in its lifetime** of billions of years.
- They're also the **primary source of heavy element**s in the universe.
- **On average, a supernova will occur once every 50 years** in a galaxy the size of the Milky Way.

ISRO, Norway and the 'Svalbard mission'

- **Rohini RH-300 Mk-II** sounding rocket rose to the skies from Svalbard, Norway, operationalising a new rocket launching range there. The solid propellant-powered rocket was shipped from India for the launch.
- The resolve to deepen space sector ties between India and Norway following Norwegian Ambassador Hans Jacob Frydenlund's visit to the ISRO headquarters last week offers an occasion to recall this challenging mission which took place 26 years ago at **Ny-Alesund**, **Svalbard**.
- "The RH-300 Mk-II was given a new name by the NSC (Norwegian Space Centre): Isbjorn-1, which translates literally as 'Polar Bear-I.'
- On the technical side, the Norway mission presented unique challenges for ISRO. The Rohini rockets had till then flown only in the tropical hot and humid conditions in India. The Svalbard archipelago, on the other hand, sits in the Arctic Ocean and temperatures were on the extremely low side

Hubble captures a jellyfish galaxy 700 million light-years away

Jellyfish Galaxy (JO206):

- It trails across the universe about **700 million light-years** away from our planet.
- It is in the **constellation Aquarius.**
- Jellyfish galaxies **resemble their marine namesakes** and that is evident in the image.
- At the bottom right in the image "tentacles" of bright star formation that trails the main disc of the galaxy are visible.

Aquarius constellation

- It is one of the 12 zodiac constellations.
- The constellation's **name means "the water-bearer"** (or "cup-bearer") in Latin.
- It lies in the region of the sky which is **sometimes referred to as the Sea**,

because it contains a number of other constellations with names associated with water.

- It is the **10th largest constellation in the sky,** occupying an area of 980 square degrees.
- It is one of the **15 equatorial constellations.**
- It is located in the **fourth quadrant of the southern hemisphere** (SQ4) and can be seen at **latitudes between +65° and -90°.**

Strong gravitational lense results in four images of same distant supernova

Gravitational Lensing

- It occurs **when a massive celestial body**, such as a galaxy cluster, **causes a sufficient curvature of spacetime for the path of light around it to be visibly bent**, as if by a lens.
- The **body causing the light to curve is accordingly called a gravitational lens.**
- An important **consequence of this lensing distortion is magnification**, **allowing us to observe objects** that would otherwise be too far away and too faint to be seen.
- **Theory**:
    - Gravitational Lensing was **first predicted in 1915 by Albert Einstein,** which involves the bending of light by objects of great mass.
    - According to **Einstein's general theory of relativity, time and space are fused together in a quantity known as spacetime.**
    - Within this theory, **massive objects cause spacetime to curve, and gravity is simply the curvature of spacetime.**
    - **As light travels through spacetime**, the theory predicts that **the path taken by the light will also be curved by an object's mass.**
    - **Gravitational lensing is a dramatic and observable example** of Einstein's theory in action.
    - **Extremely massive celestial bodies** such as galaxy clusters **cause spacetime to be significantly curved**. In other words, they **act as gravitational lenses.**
    - **When light from a more distant light source passes by a gravitational lens, the path of the light is curved, and a distorted image of the distant object** — maybe a ring or halo of light around the gravitational lens — **can be observed.**

Defence Ministry Accords Approval For Procurement Of 30 MQ-9B Predator

Drones From US

- The MQ-9B drone is a **variant of the MQ-9 "Reaper**", an **unmanned aerial vehicle (UAV)** capable of remotely controlled or autonomous flight operations.
- These are **high-altitude long-endurance drones armed with strike missiles** which can take out enemy targets with high accuracy.
- It was **developed by General Atomics Aeronautical Systems**(GA-ASI), **primarily for the United States Air Force** (USAF).
- The MQ-9B **has two variants — SkyGuardian and its sibling SeaGuardian**.
- The **Indian Navy has been operating the MQ-9B Sea Guardian since 2020**.
- **Features of MQ-9B SeaGuardian :**
    - It can **carry up to 5,670 kg and has a fuel capacity of 2,721 kg**.
    - The drone can **operate at over 40,000 feet.**
    - The Predator also has a **maximum endurance of 40 hours**, making it useful for **long-hour surveillance.**
    - It can **support land, maritime surveillance, anti-submarine warfare, anti-surface warfare, strike**, electronic warfare and expeditionary roles.
    - It is also **capable of automatic take-offs and landings.**
    - It **can safely integrate into civil airspace**, enabling joint forces and civil authorities to deliver real-time situational awareness anywhere in the maritime domain -- day or night.

Parker Solar Probe reveals mysterious origin of Geminid meteor shower on Earth

Geminid meteor shower

- **What it is?** It peaks during **mid-December** each year and is considered to be one of the best and most **reliable annual meteor showers.**
- Unlike most meteor showers that **originate from comets**, the Geminid stream appears to originate from an **asteroid known as 3200 Phaethon.**
- **New findings**
    - The new findings have perplexed scientists as **asteroids are not** typically **influenced by the Sun's heat** and should not leave behind a trail.
    - **Phaethon** is an asteroid, but as it flies by the Sun, it seems to have some kind of **temperature-driven activity.**
    - The Parker data indicates that a powerful event such as a high-speed **collision or a gaseous explosion** likely caused the creation of the Geminid stream.

3200 Phaethon

- It is **classified as an asteroid**the first to be discovered via satellite.
- It was discovered on Oct. 11, 1983, using the Infrared Astronomical Satellite, and named after the **Greek myth of Phaethon**, son of the sun god Helios, due to its close approach to Sun.
- It is **blue in colour,** which is rare for an asteroid.
- It orbits the sun every 524 days (1.43 years), coming as close as 0.14 astronomical units (AU) and reaching as far as 2.40 AU from the sun.
- Its **orbit is highly elliptical.** It completes a rotation on its axis every 3.60 hours.
- It is about 3 kilometres in diameter, making it larger than 99% of asteroids.

NASA discovers 'phosphorous', key element for life, on Saturn's moon Enceladus

Enceladus

- It is the second nearest of the **major regular moons of Saturn** and the brightest of all its moons.
- It was discovered in 1789 by the English astronomer **William Herschel** and named for one of the Giants (Gigantes) of Greek mythology.
- It is an **active moon** that hides a global ocean of liquid salty water beneath its crust.
- Its icy surface is remarkably smooth in some places, and bright white all over and it is the **most reflective body in the solar system.**

Cassini spacecraft

- The mission was **launched by NASA in 1997** and orbited Saturn from 2004 to 2017, circling the planet 294 times.
- It measured the **structure of Saturn's atmosphere and rings**, as well as how they interact with the planet's moons.
- It also discovered six named moons and **revealed Enceladus and Titan** as promising locations to **search for extraterrestrial life.**

Phosphorous

- It is the fundamental unit of **the structure of DNA and RNA**.
- Also, it is a **vital part of cell membranes and energy-carrying molecules** existing in all forms of life on Earth.

India joins Artemis Accords, will launch ISRO-NASA space mission to ISS in 2024, says White House

Artemis Accords

- The Artemis Accords are a **non-binding set of principles designed to guide civil space exploration and use in the 21st century**.
- These principles will help to ensure the **maintenance of a safe and predictable outer space environment.**
- **NASA, in coordination with the U.S. Department of State**, **established the Artemis Accords in 2020, t**ogether with seven other founding member nations.
- **Artemis Accords signatories** as of May 30, 2023: **Australia, Bahrain, Brazil**, Canada, Colombia, Czech Republic, **France**, **Israel**, **Italy**, **Japan**, Luxembourg, **Mexico**, New Zealand, Nigeria, Poland, the Republic of Korea, Romania, Rwanda, **Saudi Arabia**, **Singapore**, **Spain**, Ukraine, the **United Arab Emirates**, the **United Kingdom**, and the **United States**.
- **Principles**:
    - **Peaceful Purposes:** Consistent with the Outer Space Treaty, the Artemis Accords affirm that **cooperative activities should be exclusively for peaceful purposes** and in accordance with international law.
    - **Transparency**: Artemis Accords signatories are **committed to the broad dissemination of information regarding their respective national space policies** and space exploration plans in accordance with their national rules and regulations.
    - **Interoperability**: Interoperability enhances the potential for space exploration that is safe and **robust among cooperating nations.**
    - **Emergency Assistance:** Accords signatories **commit to taking all reasonable efforts to render necessary assistance to personnel in outer space who are in distress** and acknowledge their obligations under the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space.
    - **Registration of Space Objects**: Appropriate registration of space objects can help to mitigate the risk of harmful interference. The Artemis Accords **reinforce the importance of meeting the obligations under the Registration Convention.**
    - **Release of Scientific Data**: **Sharing scientific data with the global community** in a timely and transparent manner.
    - **Protecting Heritage**: Accords signatories intend to **preserve historically significant human or robotics landing site**s, artifacts, spacecraft etc.
    - **Space Resources**: The utilization of space resources **should be done in**

a manner that complies with the Outer Space Treaty, can benefit humankind and is critical to sustainable operations.

- **Deconfliction of Activities**: Artemis Accords signatories **needs to provide notification of their activities**, including regarding the location and general nature of their operations, and coordinating with any relevant actor to avoid harmful interference. **The area covered by the notification and coordination is referred to as a "safety zone."**
- **Orbital Debris and Spacecraft Disposal**: Planning to **mitigate for orbital debris, as well as disposing safely of spacecraft**s, is critical to maintaining a safe environment in space and operating in space sustainably.

NASA's Artemis Program:

- With the Artemis programme, **NASA aims to land humans on the moon by 2024**, **and it also plans to land the first woman and first person of colour on the moon.**
- With this mission, **NASA aims to contribute to scientific discovery and economic benefits** and inspire a new generation of explorers.

DRDO, Indian Navy demonstrate command and control of Tapas UAV from ground station to warship at sea

Tapas Unmanned Aerial Vehicle (UAV)

- It is **known asTapas-BH 201**(Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon 201) , **formerly referred to as Rustom-II.**
- It is a **Medium Altitude Long Endurance (MALE) unmanned aerial vehicle**.
- It is being **developed by Aeronautical Development Establishment (ADE),** Defence Research & Development Organisation (**DRDO**).
- **Features**:
  - It is capable of **operating at altitudes of up to 28,000 fe**et with an **endurance of over 18 hours.**
  - The drone has a **20.6-meter wingspan** and a **maximum speed of 225 kmph.**
  - It **can carry a** variety of **payloads up to a maximum of 350 kgs.**
  - It **can be controlled remotely and also has the ability to execute pre-programmed flight plans autonomously** with precision and flexibility.
  - Designed to fulfil the **Intelligence, Surveillance, Target Acquisition, Tracking & Reconnaissance (ISTAR) requirements** of the tri-services, the Tapas UAV can **effectively operate in both day and night conditions**.

- It is **pre-designed to carry certain weapons** and ca**n be converted into an armed platform** as and when required by the user.

INDIAN ARMY CONTINGENT PARTICIPATES IN MULTINATIONAL JOINT EXERCISE "EX KHAAN QUEST 2023" IN MONGOLIA

- It features participation from military contingents and observers from over 20 countries.
- The exercise is co-sponsored by **Mongolian Armed Forces (MAF) and the United States Army Pacific Command (USARPAC).**
- The Indian Army is represented by a contingent from the GARHWAL RIFLES.
- The 14-day exercise is aimed at enhancing the **interoperability of the participating nations**, sharing experience and training uniformed personnel for the United Nations Peacekeeping Operations (UNPKO).
- The exercise will prepare participants for **future UN Peacekeeping missions**, develop peace operations capabilities and enhance military readiness.
- The exercise includes Command Post Exercise (CPX), Field Training Exercises (FTX), combat discussions, lectures and demonstrations.

United Nations Peacekeeping

- UN peacekeepers provide **security and political peace-building support** to help countries make the difficult, early transition from conflict to peace.
- UN Peacekeeping is guided by three basic principles:
  - Consent of the parties
  - Impartiality
  - Non-use of force except in self-defence and defence of the mandate.
- **Role of Security Council:** The United Nations Charter gives the United Nations Security Council the responsibility to maintain international peace. For this reason, the international community usually looks to the Security Council to authorize peacekeeping operations through Chapter VII authorizations.
- UN peacekeepers are often **referred to as Blue Berets** or Blue Helmets because of their light blue berets or helmets.

CERN is helping build Einstein Telescope, a next-generation gravitational wave detector

Einstein Telescope

- It is an **advanced gravitational-wave observatory**, currently **in the planning stage.**
- It **builds on the success of current**, second-generation laser-interferometric detectors Advanced Virgo and Advanced **LIGO**, whose breakthrough discoveries

of merging black holes (BHs) and neutron stars over the past 5 years have ushered scientists into the new era of gravitational-wave astronomy.

- The Einstein Telescope **will achieve a greatly improved sensitivity by increasing the size of the interferometer** from the 3km arm length of the Virgo detector to 10km, and by **implementing a series of new technologies.**
- The **expected sensitivity** of the Einstein Telescope **will be at least a factor of ten times that of Ligo.**
- **Applications:**
    - It will m**ake it possible, for the first time, to explore the Universe** through gravitational waves **along its cosmic history up to the cosmological dark ages**, shedding light on open questions of fundamental physics and cosmology.
    - It will **probe the physics near black-hole horizons** (from tests of general relativity to quantum gravity), **help understand the nature of dark matter**, and the **nature of dark energy** and possible modifications of general relativity at cosmological scales.
    - **Its low-frequency sensitivity** will allow us to detect intermediate-mass black holes.

Gravitational Waves

- They are '**ripples' in space-time caused by** some of the most **violent and energetic processes in the Universe.**
- **Albert Einstein predicted** the existence of gravitational waves in 1916 **in his general theory of relativity.**
- Einstein's mathematics showed that **massive accelerating objects** (things like neutron stars or black holes orbiting each other) **would disrupt space-time** in such a way **that 'waves' of undulating space-time would propagate in all directions** away from the source.
- These cosmic ripples **would travel at the speed of light**, **carrying with them information** about their origins, as well as clues to the nature of gravity itself.
- The **strongest gravitational waves are produced by cataclysmic events** such as colliding black holes, supernovae, and colliding neutron stars.

Amid search for Titan, lessons for proposed Indian submersible dive

With hope dwindling on the chances of survival of those in the Titan submersible, scientists in India, preparing to undertake a similar dive in an indigenous vehicle late next year, say that multiple back-up safety measures for the crew are already in place.

- The Titan consists of a carbon-fibre sphere with a titanium casing on the front and back.

- **Indian submersible dive** insisted on a titanium enclosure, which is in the process of designing a submersible, Matsya-6000, that will take three Indians to a depth of 6,000 metres into the Indian Ocean.
- Matsya-6000 also has syntactic foam, a flotation device that would rise to the top and help determine the physical location of the submersible, even if it were unable to resurface.
- Ahead of the main dives, likely in December 2024 or early 2025, the NIOT divers will undertake several test dives up to 500 metres inside another submersible made of steel. Titanium is stronger than steel but many times lighter — a key criterion that helps the submersible resurface with relative ease from the depths of the open ocean.
- While the choice of material is made depending on the depth and the cost involved, it's crucial that the submersible's hull is perfectly spherical, so that extreme pressure at the ocean depth is evenly balanced.

Putin deploys new Zircon hypersonic cruise missiles to Atlantic

Zircon Missile

- The **3M22 Zircon, or the SS-N-33,** is a manoeuvring **anti-ship hypersonic cruise missile developed in Russia**.
- It can reach **speeds of over 9,500 kilometres per hour** (6,000 miles per hour), around nine times faster than the speed of sound.
- It's a **two-stage missile that uses solid fuel in the first stage and a scramjet motor in the second stage.**
- It can accurately pinpoint targets at a **range of more than 1,000 kilometres** (620 miles).
- **Guidance System: Active and Passive Radar Seeker.**

Hypersonic cruise missile

- It is a type of missile that is **designed to travel at extremely high speeds, typically over Mach 5** (5 times the speed of sound).
- They are **powered by rocket engines** and are typically **equipped with guidance systems** to help them navigate to their targets.
- They **can manoeuvre mid-flight**, making them harder to track and intercept.

Scientists find link between surges of cosmic radiation from space and earthquakes

- Scientists have identified a striking link between earthquakes and changes in the intensity of cosmic radiation measured on Earth's surface, according to a recent study.

- A fundamental responsibility of **CREDO** is to track worldwide alterations in the flux of secondary cosmic radiation that reaches our planet's surface. This radiation primarily originates in the planet's stratosphere.
- Earth's magnetic field, a result of eddy currents in our planet's liquid core, alters the trajectory of primary cosmic radiation's charged particles.
- Any substantial earthquakes linked to disturbances in the Earth's dynamo flows would alter the **magnetic field of Earth**, thus impacting the path of **primary cosmic radiation**. The fallout of these alterations would be apparent in the changes in the counts of secondary cosmic ray particles recorded by ground-based detectors.
- However, correlations between changes in cosmic ray intensity and earthquakes are not apparent in location-specific analyses. They only appear when seismic activity is taken into account on a global scale.
- This fact may mean that in changes in cosmic ray intensity one can see a phenomenon to which our planet is subjected as a whole. The discovery has led to intriguing questions about the potential influence of phenomena like dark matter streams.

An extrasolar radiation belt, a la Van Allen, seen for the first time

- Astronomers describe the first radiation belt observed outside the earth's solar system, using a coordinated array of 39 radio dishes from Hawaii to Germany. The images of persistent, intense radio emissions from an ultracool dwarf star revealed the presence of a cloud of high-energy electrons trapped in the object's powerful magnetic field, forming a double-lobed structure.
- Strong magnetic fields form a "**magnetic bubble**" around a planet called a **magnetosphere**, which can trap and accelerate particles to near the speed of light. All the planets in the solar system that have such magnetic fields, including the earth and Jupiter, have radiation belts. The earth's radiation belts, known as the **Van Allen belts**, are large doughnut-shaped zones of high-energy particles captured from solar winds by the magnetic field. This extrasolar radiation belt would be 10 million times brighter than Jupiter's.

Satellites capture auroras associated with carbon dioxide

Auroras

- The sun is **ejecting charged particles** from its corona, creating solar wind. When that wind slams into Earth's ionosphere, the aurora is born.
- In the Northern Hemisphere, the phenomenon is called the northern lights (aurora borealis), while in the Southern Hemisphere, it's called the southern lights (aurora australis).

- The hemispheric asymmetry of the aurora is due in part to **the sun's magnetic field interfering with Earth's magnetic field.**
- The usually observed green and red auroras **happen between 100 kilometres and 250 kilometres above the surface of the planet** due to an excited state of atomic oxygen.

Carbon Dioxide Aurora

- When charged particles crash into the planet's atmosphere, they interact with many different atoms and molecules. Carbon dioxide is one of them.
- While the gas is known for acting as a greenhouse gas due to its presence in the lowest part of the atmosphere, trace parts of carbon dioxide also exist in the atmosphere at the edge of space.
- When **carbon dioxide molecules** about 90 kilometres above Earth become **excited during an aurora, they emit infrared radiation.**
- This leads to more infrared radiation than is typically observed in the planet's atmosphere.

L&T, DRDO sign contract to build AIP modules for Scorpene class submarines

Air Independent Propulsion (AIP) System

- With the emergence of submarines, there was a problem finding satisfactory forms of propulsion underwater.
- AIP is mostly **implemented as an auxiliary source**, with the traditional diesel engine handling surface propulsion.
- Most of these systems generate electricity, which in turn drives an electric motor for propulsion or recharges the boat's batteries.
- AIP **allows longer submergence** than a conventionally propelled submarine. A typical conventional power plant provides 3 megawatts maximum, and an AIP source around 10 per cent of that. A nuclear submarine's propulsion plant is much greater than 20 megawatts.

AIP system

- It allows the submarines **to stay for longer hours in water**. The submarines need to come to the surface of the water to charge their batteries. This is reduced by AIP System.
- It **decreases the noise levels** made by the submarines. This makes it hard to detect the submarines.
- **Types of AIP:** Open-cycle systems, Closed-cycle diesel engines, Closed-cycle steam turbines Stirling cycle engines and Fuel cells.

Types of Submarines

- **Conventional or Diesel-electric submarine:** They need atmospheric oxygen

to run the diesel generator which in turn charges the batteries.

- **Nuclear Submarine:** It is a submarine powered by a nuclear reactor, but not necessarily nuclear-armed. They have considerable performance advantages over conventional submarines.

INS Sunayna visited Mombasa, Kenya

- It is a **Saryu class Offshore Patrol Vessel** which was commissioned at Kochi.
- It is based under Southern Naval Command and is **built at Goa Shipyard Limited.**
- The warship is designed to undertake fleet support operations, coastal and offshore patrolling, ocean surveillance and monitoring of Sea Lines of Communications and offshore assets, and escort duties.
- It can achieve speeds of 25 knots.
- The ship also has an automatic **power management system.**
- It is fitted with the latest Navigation, Communication and Electronic Support Systems.
- Other Sarayu class includes the **INS Sumitra and INS Sumedha.**

Passage Exercise (PASSEX)

- A **Maritime Partnership Exercise** was conducted between **the Indian Navy and Kenyan Navy.**
- The crew of both the Indian and Kenya Navy conducted drills in Firefighting & Damage Control, boarding exercises, asymmetric threat simulations and VBSS during the harbour phase.
- A HADR capsule was also conducted onboard for the Kenya Navy.

General Electric inks deal with HAL, to make fighter jet engines for Indian Air Force

- It is a **high-performance, two-spool, axial-flow turbofan engine** that is **used to power** a variety of military aircraft, including the **F/A-18E/F Super Hornet, the JAS 39 Gripen, and the Tejas Mark II.**
- It is a **derivative of the GE F404 engine**, which was developed in the 1970s.
- It has been **used by U.S. Navy aircraft for more than 30 years**.
- The F414 powers or is on order to power jets in the **S., Sweden, Australia, Kuwait, Brazil, South Korea, India and Indonesia.**
- **Features**:
- It combines the proven reliability, maintainability, and operability of its successful F404 predecessor with advanced technologies to **provide up to 35**

percent more thrust.

- It's simple, **modular design is reliable and easy to maintain.**
- It is the **first fighter engine to use a Full Authority Digital Electronic Control (FADEC).** FADEC **provides precise control of the engine's performance**, which improves fuel efficiency and reduces emissions.
- Is the **first fighter engine to use an integrated electronic engine instrumentation (IEE) system.** IEE **provides real-time data on the engine's performance,** which helps pilots to make informed decisions about engine operation.
- Its wide chord, **high-pressure compressor (HPC) provides greater efficiency** and **lower emissions** than previous generation engines.
- The **engine's low-pressure turbine (LPT)** is designed for **high efficiency and durability.**

Indian-origin satellite expert Aarti Holla-Maini appointed as UN Outer Space Affairs director

United Nations Office for Outer Space Affairs (UNOOSA)

- It is the UN office responsible for **promoting international cooperation in the peaceful uses of outer space.**
- It forms **part of the United Nations Office at Vienna** and **serves as the Secretariat for the UN General Assembly's only committee** dealing exclusively with those issues: **the Committee on the Peaceful Uses of Outer Space.**
- **Functions**:
    - UNOOSA implements **the United Nations Programme on Space Applications (PSA).** Under the Programme, UNOOSA conducts training courses, workshops, seminars and other activities on space applications.
    - On behalf of the UN Secretary-General, **UNOOSA maintains the Register of Objects Launched into Outer Space** and **disseminates via its website** that information recorded in the Register.
    - It also **prepares and distributes documents, reports**, studies and publications on **various aspects of space science and technology applications** and international **space law**.
    - It works to improve the **use of space science and technology** for the economic and **social development of all countries, particularly developing countries.**

Chandrayaan-3 launch scheduled for July 13

- The launch of Chandrayaan-3 has been scheduled for July 13 at 2.30 p.m., officials said on Wednesday.
- This is a follow-on mission to Chandrayaan-2 to demonstrate end-to-end capability in safe landing and roving on the lunar surface. It has a lander and rover configuration. Chandrayaan-3 will be launched by the Launch Vehicle Mark-III from the Satish Dhawan Space Centre in Sriharikota
- The propulsion module will carry the lander and rover configuration till 100 km lunar orbit. It has a **Spectro-Polarimetry** of Habitable Planet Earth payload to study the spectral and polarimetric measurements of Earth from the lunar orbit.
- The lander, rover and the propulsion module will have payloads for performing experiments designed to give scientists new insights into the characteristics of earth's lone natural satellite.
- The lander will have four payloads — Radio Anatomy of Moon Bound Hypersensitive ionosphere and Atmosphere (**RAMBHA**), Chandra's Surface Thermo physical Experiment (**ChaSTE**), Instrument for Lunar Seismic Activity (**ILSA**) and the LASER Retroreflector Array (**LRA**). The six-wheeled rover will have two payloads — the Alpha Particle X-ray Spectrometer (**APXS**) and the LASER Induced Breakdown Spectroscope (**LIBS**).
- In addition to these, there will be one payload on the propulsion module, the Spectro-polarimetry of HAbitable Planet Earth (**SHAPE**).
- The Indian Space Research Organisation (ISRO) plans to retain the names of the Chandrayaan-2 lander and rover for their Chandrayaan-3 equivalents as well. This means, the Chandrayaan-3 lander will bear the name 'Vikram' (after Vikram Sarabhai, the father of the Indian space programme) and the rover, 'Pragyan'.

Asteroid Day: History of Tunguska asteroid event and all you need to know

- It is observed on **June 30** every year.
- The day aims to **raise awareness about asteroid impact hazards** and crisis communication actions in case of a credible asteroid threat to planet Earth.
- The day also **aims to educate people about the latest and upcoming asteroid research and technology** through numerous events and activities held by organisations across the globe.
- **History**:
    - The **United Nations General Assembly (UNGA) passed a resolution** in December 2016, **designating June 30 as International Asteroid Day**.

- The UNGA adopted the resolution b**ased on the proposal made by the Association of Space Explorers**, **endorsed by the Committee on the Peaceful Uses of Outer Space (COPUOS).**
- The date was chosen to **commemorate the anniversary of the Tunguska asteroid's impact** over Siberia on June 30, 1908.

Tunguska Event:

- It is considered the **biggest asteroid impact in recorded history** when an **asteroid exploded a few kilometres above the Tunguska region of central Siberia**.
- It **flattened more than 80 million trees in seconds, over an area spanning nearly 800 square miles** (2,000 square kilometres) — but **left no crater.**

Asteroid

- Asteroids are **small, rocky objects that orbit the sun.**
- Although asteroids orbit the sun like planets, **they are much smaller than planets.**
- They are **leftovers from the formation of our solar system.**
- From being as small as 10 meters across to as huge as 530 km in diameter, **asteroids have varied sizes.**

Indigenous heavy weight torpedo hits bull's eye in live test by Indian Navy

Varunastra

- It is **ship launched, heavy weight, electrically-propelled anti-submarine torpedo** capable of **targeting quiet submarines**, **both in deep and shallow waters** in an intense counter-measures environment.
- It was **designed and developed by Vizag-based Naval Science and Technological Laboratory (NSTL) under the Defence Research and Development Organisation (DRDO)** and is **manufactured by Bharat Dynamics Ltd (BDL).**
- Varunastra can be **fired from all Anti-submarine warfare (ASW) ships** capable of firing heavy weight torpedoes.
- **Features:**
  - It has a length of **7.78 meters (25.5 feet) and a diameter of 533.4 mm (21.00 in).**
  - It is capable of being **launched from surface ships and submarines.**
  - It can achieve **speeds in excess of 40 knots (74 km/h; 46 mph) and has a range of 40 km (25 mi).**
  - **Weighing around 1.5 tonnes**, it can c**arry a 250 kg (550 lb) high-explosive warhead** and has a **maximum operating depth of 600**

metres (2,000 ft). It has long range with multi manoeuvring capabilities.

- The torpedo's **guidance system uses active-passive acoustic homing**, wire **guidance, and GPS/NavIC satellite guidance.**
- It has **conformal array transducers that allow it to look at wider angles** than most common torpedoes.
- It also has an **advanced autonomous guidance algorithm** with low drift navigational aids, an insensitive warhead that can operate in various combat scenarios, and a GPS-based locating aid.

SOCIETY

OTT platforms mandated to show anti-tobacco warnings

It's now mandatory for over-the-top (OTT) streaming platforms to display anti-tobacco warnings as seen in movies screened in theatres and TV, as per a Union Health Ministry notification amending the rules under the **Cigarettes and Other Tobacco Products Act (COTPA), 2004**.

Prominent warnings

- Meanwhile, as per the notification released on World No Tobacco Day, publishers of online curated content displaying tobacco products, or their use will be required to display anti-tobacco health spots at the beginning and middle of the programme.
- They shall also be required to exhibit an anti-tobacco health warning as a prominent static message at the bottom of the screen when tobacco products or their use are displayed during the programme.
- It added that the anti-tobacco health warning message as specified in clause(b) of sub-rule (1) shall be legible and readable, with font in black colour on white background and with the warnings 'Tobacco causes cancer' or 'Tobacco kills'.
- Besides warning messages, health spots and audio-visual disclaimers will have to be in the same language as used in the show.
- Additionally, if the publisher of online curated content fails to comply with the provisions, an inter-ministerial committee shall issue notice giving reasonable opportunity to explain such failure and make appropriate modification in the content
- The expression "online curated content" means any curated catalogue of audio-visual content, other than **news and current affairs content**, which is owned by, licensed to, or contracted to be transmitted by a publisher of online curated content, and made available on demand, including but not limited through subscription, over the internet or computer networks, and includes films, audiovisual programmes, television programmes, serials, series and other such content.

Treatment worth ₹61,501 cr. provided under PM-JAY scheme

- Cancer treatment, emergency care, orthopaedic and urology (kidney-related ailments) top the tertiary care specialities treatment availed by beneficiaries under the **Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY)** till date, as per data released by the Health Ministry on Wednesday. The yojana has now recorded five crore hospital admissions amounting to ₹61,501 crore under the scheme.

- Approximately 49% of Ayushman card recipients are women and over 48% of total authorised hospital admissions under the AB PM-JAY scheme have been availed by women, noted the data.
- "Also, over 141 medical procedures under the PM-JAY are exclusively earmarked for women," it said, adding that AB PM-JAY beneficiaries can avail treatment corresponding to a total of 1,949 procedures under 27 different specialities The flagship scheme being implemented by the National Health Authority (NHA) provides health cover of ₹5 lakh per family per year for secondary and tertiary care hospitalisation to 12 crore beneficiary families.
- The AB PM-JAY is being implemented in 33 States and Union Territories except **Delhi, Odisha, and West Bengal.** Till date, 23.39 crore beneficiaries have been verified and issued Ayushman cards for availing free treatment under the scheme.

Ayushman Bharat-PMJAY

- PM-JAY is the **world's largest health insurance/ assurance scheme** fully financed by the government.
- **Launched in February 2018,** it offers a sum insured of **Rs.5 lakh per family for secondary care** (which doesn't involve a super specialist) as well as tertiary care (which involves a super specialist).
- Under PMJAY, cashless and paperless access to services are provided to the beneficiaries at the point of service, that is, hospital.
- Health Benefit Packages **covers** surgery, medical and day care treatments, cost of medicines and diagnostics.
    - Packaged rates (Rates that include everything so that each product or service is not charged for separately).
    - These are flexible but the hospitals can't charge the beneficiary more once fixed.
- *Beneficiaries:*
    - It is an entitlement-based scheme that targets the beneficiaries as identified by latest **Socio-Economic Caste Census (SECC) data.**
        - Once identified by the database, the beneficiary is considered insured and can walk into any empaneled hospital.
- *Funding:*
    - The funding for the scheme is shared – 60:40 for all states and UTs with their own legislature, 90:10 in Northeast states and Jammu and Kashmir, Himachal and Uttarakhand and 100% Central funding for UTs without legislature.
- *Nodal Agency:*

- The **National Health Authority (NHA)** has been constituted as an autonomous entity under the Society Registration Act, 1860 for effective implementation of PM-JAY in alliance with state governments.
- The State Health Agency (SHA) is the apex body of the State Government responsible for the implementation of AB PM-JAY in the State.

Kerala CM launches first phase of K-FON

Kerala Fibre Optic Network (K-FON) Chief Minister Pinarayi Vijayan on Monday commissioned the first phase of the project.

The project will provide free Internet access to 20 lakh below poverty line (BPL) families, connect 30,000 government institutions and provide Internet connection at a nominal rate to the public.

Schemes related:

Universal Service Obligation Fund (USOF) [NITI Aayog's Aspirational Districts programme]

- It **envisages to provide 4G based mobile services in the 7,287 uncovered villages of 44 Aspirational Districts across five States.** It would be **funded by the Universal Service Obligation Fund (USOF).**It will **enhance digital connectivity** useful for self-reliance, facilitate learning, dissemination of information and knowledge, skill upgradation and development, disaster management, e-Governance initiatives, establishment of enterprises & e-commerce facilities, etc.It seeks to fulfill the vision of **Digital India** promoting domestic manufacturing and fulfilling the objectives of **Atmanirbhar Bharat** etc.
- **Universal Service Obligation Fund (USOF):**
  - **About:**
    - USOF ensures that there is **universal non-discriminatory access to quality ICT** (Information and Communications Technology) **services** at economically efficient prices **to people in rural and remote areas.**
    - It was **created under the Ministry of Communications in 2002.**
    - It is **a non-lapsable fund**, i.e., the unspent amount under a targeted financial year does not lapse and is accrued for next years' spending.
    - All credits to this fund require parliamentary approval and it has statutory support under **Indian Telegraph (Amendment) Act, 2003.**

- **Objectives:**
  - **Economic:** Network extension & stimulate uptake of the ICT services
  - **Social:** Mainstreaming the underserved & un-served areas/groups by bridging the Access Gap.
  - **Political:** to enable citizens exercise their political rights in an informed way and
  - **Constitutional:** Equitable distribution of the fruits of the telecom/digital revolution and fair allocation of national resources (pooled USO levy) via targeted subsidies.
- **Significance:**
  - The rural areas get the Village Public Telephones (VPTs), Rural Community Phones (RCPs), Rural Household Telephones (RDELs), and mobile infrastructure.
  - With access to affordable telecom services in remote and rural areas it **can help stemming urban migration and ensure generating employment opportunities in the rural areas.**
  - The increased awareness of ICT services in the rural areas and growing participation of the rural people **will help promote facilities related to health, education etc.**
  - It can ensure the **growth of Rural Business Process Outsourcing** (BPOs-Rural) **and Rural Knowledge Process Outsourcing** (KPOs-Rural.)
  - USOF is also perceived as the right tool **to extend the benefits of the government schemes** aimed at the social development of the rural population.

IIT Madras retains top position in overall ranking, check complete list here

NIRF 2023

- **Indian Institute of Technology Madras** retains its 1st position in Overall Category and Engineering.
- **Indian Institute of Science,** Bengaluru tops the Universities Category and stood first in Research Institutions Category.
- IIM Ahmedabad tops in Management subject retaining its first position.
- All India Institute of Medical Sciences (AIIMS), New Delhi occupies the top slot in Medical.
- **National Law School of India** University, Bengaluru retains its first position.
- Indian Agricultural Research Institute, New Delhi takes the top slot in

Agriculture and Allied Sectors.

- **Three distinct additions to the 2023 edition of India Rankings are as follows:**
    - Introduction of a **new subject namely Agriculture & Allied Sectors**.
    - Integration of the **"Innovation"** ranking previously executed by the Atal Ranking of Institutions on Innovation Achievements (ARIIA) into the India Rankings to reduce the burden on institutions of providing similar data to two different agencies.
    - Expansion of scope of "**Architecture" to "Architecture and Planning"** to include institutions imparting courses in Urban and Town Planning.
- With the addition of these the existing portfolio of India Rankings has increased to **13 categories** and subject domains that have been ranked in India Rankings 2023.
- It ranks Overall, University, Colleges, Research Institutions & Innovation and also 8 subject domains, namely Engineering, Management, Pharmacy, Architecture & Planning, Medical, Law, Dental Agriculture and Allied Sectors.
- **Five broad categories of parameters are identified in the NIRF:** Teaching, learning and resources (TLR); research and professional practice; graduation outcome; outreach; and inclusivity and perception.

Uttar Pradesh state government has decided to gift GI-tagged Gulabi meenakari handicrafts to the visiting delegates from G20 nations.

Gulabi meenakari handicraft

- It is one of the rarest crafts in India that is practised in the by lanes of Varanasi, near Gai Ghat.
- It is **an art form from Persia** and involves **colouring the surface of metals** by fusing different colours.
- This art **was brought to the city of Varanasi** by Persian enamellists **during the Mughal** era around the early 17th century.
- The word 'mina' is the feminine form of the Persian word 'Minoo' and means 'heaven'.
- It refers to the azure colour of heaven.
- In Varanasi, it is practised **on jewellery and home decor items.**
- Minakari work uses very **simple tools like salai** (an etching tool), kiln, metal palette, mortar and pestle, **kalam** (a tool used to apply enamel), brass dye, small scrubbing brush, forceps and **takala** (a needle-like tool to apply colours).
- **This craft can be found popularly in three forms**
    - **Ek Rang Khula Meena** in which only gold outlines are exposed and a

single transparent colour is used.
    - **Panch Rangi Meena** in which the five colours of red, white, green, light blue and dark blue are used
    - **Gulabi Meena** in which pink is the dominant colour.
- **Varanasi** is highly popular for Gulabi Minakari.

Ishad mango from Ankola gets GI tag

- It is grown **predominantly around Ankola,** is tasty and contains a lot of pulp.
- It is said that the mango variety has been cultivated for the last 400 years.
- It has two variants — **Kari Ishad**, which has thin skin, more pulp and is sweeter, and **Bili Ishad,** which has thick skin and less pulp and sweetness.
- The **Kari Ishad is accepted as one of the finest quality mangoes** due to its unique aroma, luscious taste, high amount of pulp, shape, and size.

Geographical Indication Tag

- It is a sign used on products that have **a specific geographical origin and possess qualities** or a reputation that are due to that origin.
- This is typically used for **agricultural products, foodstuffs, wine and spirit drinks, handicrafts and industrial products**.
- The **Geographical Indications of Goods (Registration and Protection) Act, 1999** seeks to provide for the registration and better protection of geographical indications relating to goods in India.
- This GI tag is **valid for 10 years** following which it can be renewed.

One lakh girls in 11-14 age group brought back to schools

Kanya Shiksha Pravesh Utsav:

- It was launched by the **Ministry of Women and Child Development** (MoWCD), in partnership with the **Ministry of Education and UNICEF**
- **Objective:** Enhancing enrolment and retention of girls between 11-14 years of age in school.
- The initiative intends to build on the existing schemes and programmes like Schemes for Adolescent Girls (SAG), BetiBachaoBetiPadhao (BBBP) and National Education Policy (NEP) to work on a comprehensive system for out-of-school girls.
- Now Ministry of Women and Child Development has decided to club together three programmes under a new scheme — **Anganwadi services, poshan Abhiyan and scheme for adolescent girls** — since all these had the same nutritional targets."
- In the new scheme, a new category is created in which adolescent girls **between**

14 and 18 years are covered.

Gita Press, Gorakhpur, awarded Gandhi Peace Prize for 2021

Gandhi Peace Prize

- It is an annual award instituted by the Government of India in 1995,
- It was instituted on the occasion of the **125th Birth Anniversary of Mahatma Gandhi** as a tribute to the ideals espoused by Mahatma Gandhi.
- The award is open to all persons regardless of nationality, race, language, caste, creed or gender.
- The award carries an amount of **1 crore, a citation**, a plaque and an exquisite traditional handicraft/handloom item.
- The prize can be given to **institutions, individuals and organisations.**
- Recent awardees include Sultan Qaboos Bin Said Al Said, Oman (2019) and Bangabandhu Sheikh Mujibur Rahman (2020), Bangladesh.

Gita Press

- It was established in 1923, Gita Press is one of the **world's largest publishers**, having published 41.7 crore books in 14 languages, including 16.21 crore Shrimad Bhagvad Gita.
- In recognition of its outstanding contribution towards social, economic and political transformation through non-violent and other Gandhian methods.

Ambubachi Mela: Three Camps Set Up For Devotees

- It is an **annual Hindu fair held at the historic Kamakhya Temple.**
- It is celebrated **during the monsoon season** that happens to fall during the Assamese month Ahaar, **around the middle of June**.
- **Occasion**: It is the **celebration of the yearly menstruation course of goddess Maa Kamakhya.**
- **Other names:** This mela is **also known as Ameti or Tantric fertility festival** since it is closely associated with Tantric Shakti cult prevalent in eastern parts of India.

Kamakhya temple

- **Location**: It is **situated on Nilachal Hill** and adjoining the **southern bank of the Brahmaputra River in Guwahati,**
- It is one of the **most revered centres of Tantric practices**.
- It is regarded as **one of the oldest of the 51 Shakti Peethas in India.**
- **Temple Architecture:**
    - It had been **modelled out of a combination of two different styles**

namely, the **traditional nagara or North Indian and Saracenic or Mughal style** of architecture.

- This unusual combination has been named the **Nilachala Style of Architecture**.
- This is the **only temple of Assam having a fully developed ground plan**.
- It **consists of five chambers**, **garbhagriha or sanctuary, antarala or vestibule, Jagan Mohan or principal chamber, bhogmandir or ritual chamber and natmandir or opera hall** for performing traditional dance and music associated with sukti temples.
- It is interesting to note that the **superstructure of** each of the above **chambers exhibits different architectural features.**
- While the **main temple contains a modified Saracenic dome,** the **antarala carries a two-roofed design,** the bhogmandir (also called pancharatna) with five domes similar in appearance to the main temple and the natmandir having a shell-roof with apsidal end similar to some of the impermanent namghars or prayer halls found in Assam.

Gender Gap Report, 2023:

- Global Gender Gap Report is **released annually by the World Economic Forum (WEF) since 2006.**
- It **measures gender parity in 146 countries** and **across four areas**: **economic participation and opportunity, educational attainment, health and survival and political empowerment.**
- *Highlights*
  - **India was ranked at 127 out of 146 countries** in terms of gender parity, an improvement of eight places from last year.
  - According to the report, **India had attained parity in enrolment across all levels of education.**
  - **India had closed 64.3% of the overall gender gap**. However, it underlined that **India had reached only 36.7 % parity on economic participation and opportunity**.
  - **On political empowerment, India has registered 25.3% parity**, with women representing 15.1% of parliamentarians — the highest for the country since the inaugural report in 2006.
  - The index ranked **India's neighbours Pakistan at 142, Bangladesh at 59, China at 107,** Nepal at 116, Sri Lanka at 115 and Bhutan at 103.
  - **Iceland is the most gender-equal country in the world** for the 14th

consecutive year and the only one to have closed more than 90% of its gender gap.

- Overall, the **Southern Asian region** has achieved 63.4% gender parity, **the second-lowest of the eight regions.**

Ancient Maya city discovered in Mexican jungle

- It is located in the Balamku ecological reserve on the country's **Yucatan Peninsula.**
- This city has been **named Ocomtun** - meaning "stone column" in the Yucatec Maya language.
- This would have been an important centre for the peninsula's central lowland region between 250 and 1000 AD.
- The city includes large **pyramid-like buildings, stone columns, three plazas** with "imposing buildings" and other structures arranged in almost-concentric circles.
- It has a core area located on high ground surrounded by extensive wetlands.

Mayan Civilization

- The Mayans are probably the best-known of the **classical civilizations of Mesoamerica.**
- Originating in the **Yucatán peninsula around 2600 B.C.**, they rose to prominence around A.D. 250 in present-day southern Mexico, Guatemala, northern Belize and western Honduras.
- Building on the inherited inventions and ideas of earlier civilizations, the Maya developed **astronomy, calendrical systems and hieroglyphic writing.**
- They were also noted for elaborate and highly decorated ceremonial architecture, including temple pyramids, palaces and observatories, all built without metal tools.
- They were also skilled farmers, clearing large sections of tropical rainforest and, where groundwater was scarce, building sizable underground reservoirs for the storage of rainwater.

Yucatan Peninsula

- It is a Northeastern projection of Central America which is lying **between the Gulf of Mexico to the west and north and the Caribbean Sea to the east.**
- The peninsula is almost wholly composed of beds of **coralline and porous limestone rocks.**

UNDP and DAY-NULM to jointly empower women entrepreneurs

- To **empower women** to make **well-informed career choices** in the field of

entrepreneurship.

- It will provide support for women looking to start and expand their enterprises such as the **care economy, digital economy, electric mobility, waste management, food packaging** and more.
- Focused on fostering entrepreneurship development and accelerating enterprise growth.
- **Time-Period:** It is a **three-year project, extendable beyond 2025** which will cover eight cities in the initial phase.
- UNDP will offer national-level capacity-building support to DAY-NULM.
- This support will focus on knowledge generation and management, such as compiling compendiums of best practices related to urban poverty, to enhance the implementation of national-level schemes.
- UNDP will also contribute to the initiative by **developing community business mentors called Biz-Sakhis** in selected project locations.
- These mentors, who possess valuable business knowledge, can support new and existing enterprises, and serve as a resource for DAY-NULM at a later stage.

DAY-NULM

- It is a flagship mission under the Union **Ministry of Housing and Urban Affairs.**
- It has the aim to uplift the urban poor by enhancing **sustainable livelihood opportunities through skill development.**
- **Funding:** It will be shared between the Centre and the States in the ratio of 75:25. For North Eastern and Special Categories – the ratio will be 90:10.

Joha rice -- the Nutraceutical of choice in diabetes management

Joha rice

- It is an **indigenous rice of Assam.**
- It is unique in aroma and grain characteristics and distinct from other aromatic rice like Basmati.
- It is grown in **Sali/ Kharif season.**
- Major Joha varieties included in this are **Kola Joha, Keteki Joha, Bokul Joha and Kunkuni Joha.**
- This rice is also rich in several antioxidants, flavonoids, and phenolics.
- It has got **Geographical Indication (GI) tag.**
- A recent study revealed that;
    - This rice variety has two **unsaturated fatty acids,**, **linoleic acid (omega-6) and linolenic (omega-3) acid.**

- These essential fatty acids (**which humans cannot produce**) can help maintain various physiological conditions.
- Omega-3 fatty acid prevents several metabolic diseases such as **diabetes, cardiovascular diseases, and cancer.**
- It has also proved to be effective in lowering blood glucose and preventing diabetes onset in diabetic rats.

Diabetes

- It is a chronic disease that occurs either when the **pancreas does not produce** enough insulin or when the body **cannot effectively use the insulin it produces**.
- Insulin is a hormone that regulates blood glucose.
- It is a **Non-Communicable Disease (NCD).**

PM conveys best wishes on Kharchi Puja

- It is one of the main **festivals of Tripura.**
- It is performed **during the months of July-August** on the eighth day of the new moon.
- The meaning of Kharchi can be understood by splitting the word into two Tripuri words "Khar" or Kharta meaning sin and "Chi" or si meaning cleaning. Hence it signifies **the cleansing of our sins.**
- It occurs during the month of 'Ashad' on the 'Shukla Ashtami' day.
- The fourteen Gods are worshipped by the **Royal priest, 'Chantai.**
- It lasts for seven days, and it takes place at old Agartala in the **Fourteen Gods** temple known as the '**Chaturdasha Devata' temple premises.**
- The Kharchi Puja deities do not have a full body; they have only heads which are worshipped.
- On the day of the puja, the fourteen Gods are taken from the temple **to the river Saidra** by the Chantai members and given bathe with the holy river water, then carried back to the temple.
- This festival's customs are completely related to the authentic Tripuri traditions.

PM Modi to launch mission to eliminate sickle cell anaemia

National Sickle Cell Anaemia Elimination Mission

- It was **announced as part of the Union Budget 2023**.
- **Vision**: **Eliminate sickle cell disease** (SCD) as a public health problem **in India before 2047.**

- The overall aim is to **enable access to affordable and quality health care for all SCD patient**s and to lower the prevalence through **awareness,** change of practices and **screening interventions.**
- The mission will entail awareness creation, **universal screening of seven crore people in the 0-40 years age group in affected tribal areas and counselling** through collaborative efforts of central ministries and state governments.
- **Initially, the focus shall be on 17 states with higher prevalence of SCD,**, Gujarat, Maharashtra, Rajasthan, Madhya Pradesh, Jharkhand, Chhattisgarh, West Bengal, Odisha, Tamil Nadu, Telangana, Andhra Pradesh, Karnataka, Assam, Uttar Pradesh, Kerala, Bihar and Uttarakhand.

Sickle Cell Anaemia

- It is an **inherited blood disorder**.
- **It affects haemoglobin,** the molecule in red blood cells that delivers oxygen to cells throughout the body.
- **People with this disease have atypical haemoglobinmolecules called haemoglobin** S, which **can distort red blood cells into a sickle, or crescent, shape**.
- **These sickle cells also become rigid and sticky**, which can slow or **block blood flow.**
- **What causes it?**
    - The cause of Sickle cell disease is a **defective gene called a sickle cell gene**.
    - A person will be born with sickle cell disease **only if two genes are inherited—one from the mother and one from the father.**
- Symptoms:
    - **Early stage**: **Extreme tiredness** or fussiness from **anaemia**, painfully **swollen hands and feet**, and jaundice.
    - **Later stage**: Severe **pain, anaemia, organ damage**, and infections.
- Treatments:
    - The only cure for this disease is **bone marrow or stem cell transplantation**.
    - However, **there are treatments that can help relieve symptoms**, lessen complications, and prolong life.

Who are Meira Paibis, Manipur's 'torch-bearing' women activists

Meira Paibis

- **Who are they?** The most visible organised face of **civil society activists** have

been the Meira Paibis or "women torch bearers", so called because of the flaming torches that they hold aloft while marching in the streets, often at night.

- They, also known **as Imas or Mothers of Manipur,** are **Meitei women** who come from all sections of society in Manipur.
- Members of this group are widely respected and **represent a powerful moral force**.
- The Meira Paibis are loosely organised, **usually led by groups of senior women**, but have no rigid hierarchy or structure or any overt political leanings.

Social role

- The Meira Paibi was formed in 1977; presently, it is one of the largest grassroots movements in the world.
- Its initial focus on **fighting alcoholism and drug abuse** has now expanded to countering human rights violations and the development of society at large.

Piped potable water across India will avert 4,00,000 diarrhoea deaths, finds WHO

Jal Jeevan Mission

- It is envisioned to provide **safe and adequate drinking water** through individual household tap connections **by 2024 to all households in rural India.**
- It is based on a **community approach** to water and will include extensive Information, Education and communication as a key component of the mission.
- **Nodal Ministry**: Department of Drinking Water and Sanitation under the **Jal Shakti Mantralaya.**
- **Strategy:**
    - This Mission focuses on **integrated demand and supply side management** of water at the local level, including creation of local infrastructure for source sustainability like rainwater harvesting, groundwater recharge and management of household wastewater for reuse in agriculture.
    - The Mission will **converge with** other **Central and State Government Schemes** to achieve its objectives of sustainable water supply management across the country.
- **Funding Pattern:**
    - **50:50** between **Centre and States**
    - 90:10 for Himalayan and North-Eastern States.
    - In case of **UTs**, **100% funding** is provided by the Central government.

ART & CULTURE

In answer to an RTI request, the Archaeological Survey of India's (ASI) Public Information Officer stated that information on who built the Agra Fort is not available with his office.

Agra Fort

- *Location:*
  - It is a large **16th-century fortress of red sandstone** located on the banks of **Yamuna River** in the historic **city of Agra**, west-central **Uttar Pradesh**.
  - It is about **5 km northwest of** its more famous sister monument, **the Taj Mahal.**
- *History:*
  - It was **built under the commission of Emperor Akbar in 1565.**
  - **It was only during** the reign of Akbar's grandson**, Shah Jahan**, that the **site took on its current state.**
  - It was the **main residence of the emperors of the Mughal Dynasty till 1638,** when the **capital was shifted from Agra** to Delhi.
  - The fort was **invaded and captured by the Maratha Empire in the early 18th century.** Thereafter, it changed hands between the Marathas and their foes many times.
  - **After their catastrophic defeat at Third Battle of Panipat** by Ahmad Shah Abdali in 1761, **Marathas remained out of the region** for the next decade. Finally **Mahadji Shinde took the fort in 1785.**
  - It was **lost by the Marathas to the British during the Second Anglo-Maratha War**, in 1803.
  - The fort was the **site of a battle during the Indian rebellion of 1857,** which caused the end of the British East India Company's rule in India, and led to a century of direct rule of India by Britain.
- *Features:*
  - The fort is **crescent-shaped**, with a l**ong, nearly straight wall facing the Yamuna river** on the east side.
  - The fort houses a **maze of buildings, including vast underground sections**.
  - The outer wall is **surrounded by a wide and deep moat on three sides**.
  - The Agra Fort has **four main gateways- the Khizri Gate, Amar Singh Gate, Delhi Gate and Ghazni Gate.**
  - Among the **major attractions** in the fort **is Jahāngīr's Palace**

(Jahāngīri Mahal), built by Akbar as a private palace for his son Jahāngir.

- The fort complex was **designated a UNESCO World Heritage site in 1983.**

National Archives of India organizes exhibition "Hamari Bhasha, Hamari Virasat" on the occasion of 75th International Archives Day

Gilgit Manuscripts

- It was written between the **5" -6" centuries CE,** which is the oldest surviving manuscript collection in India.
- It was written **on the birch bark folios documents** written on pieces of inner layer of the bark of birch trees were found in Kashmir region.
- It contains both canonical and non-canonical Jain and Buddhist works that throw light on the evolution of **many religious-philosophical literature.**

Manuscripts

- A manuscript is a **handwritten composition on paper, bark, cloth, metal, palm leaf** or any other material dating back at least seventy-five years that has significant scientific, historical or aesthetic value.
- These are **found in hundreds of different languages and scripts**. Often, one language is written in a number of different scripts.
- For example, Sanskrit is written in Oriya script, Grantha script, Devanagari script and many other scripts.
- These are distinct from historical records such as epigraphs on rocks, farmans, revenue records which provide direct information on events or processes in history. Manuscripts have knowledge content.

Neolithic-era celt found in Tamil Nadu's Poothinatham village

Neolithic Age

- Neolithic, also **called New Stone Age**, is the **final stage of cultural evolution or technological development among prehistoric humans.**
- The Neolithic stage of development was **attained during the Holocene Epoch**(the last 11,700 years of Earth's history).
- The **starting point of the Neolithic** is generally thought to **have occurred sometime about 10,000 BCE.**
- The **Neolithic followed the Palaeolithic Period**, or the age of chipped-stone tools, and **preceded the Bronze Age**, or the early period of metal tools.
- The Neolithic Revolution **started in the Fertile Crescent, a region of the Middle East** where humans first took up farming.
- The **term Neolithic is most frequently used in connection with agriculture**,

which is the time when cereal cultivation was introduced.

- **Features**:
    - It was **characterized by stone tools shaped by polishing** or grinding, **dependence on domesticated plants or animals**, s**ettlement in permanent villages**, and the appearance of such **crafts as pottery and weaving.**
    - The **houses were built of mud and reed and rectangular or circular shapes**.
- Some of the **important Neolithic sites in India include Mehrgarh**, the oldest Neolithic site in the province of Pakistan called Baluchistan, **Burzahom in Kashmir**, **Chiron in Bihar and Uttar in Andhra Pradesh, Edakkal caves in Kerala.**

Revamp on cards for forest around Malcha Mahal

Malcha Mahal

- It is a **Tughlaq-era hunting lodge**, **built by Feroz Shah Tughlaq in the 14th century**.
- **Location**: Chanakyapuri area of **New Delhi.**
- It **came to be known as Wilayat Mahal after Begum Wilayat Mahal of Awadh,** who was reportedly **given the place by the government of India in May 1985**.
- For over three decades, it **served as home to the family of Begum Wilayat Mahal, claiming to be descendants of the Nawab of Awadh**, whose last member, 'Prince' Ali Raza, died in 2017.

Feroz Shah Tughlaq

- Born in 1309, Firoz Shah Tughlaq was the **third ruler of the Tughlaq dynasty** that ruled over Delhi from 1320 to 1412 AD.
- **He was in power from 1351 to 1388 AD.**
- He **ascended the throne after the death of his cousin Muhammad-bin Tughlaq** (ruled from 1324 to 1351 AD).
- **Rule of Firoz Shah Tughlaq:**
    - His **succession was faced with many rebellions,** and due to widespread unrest, **his realm was much smaller than Muhammad's.**
    - During his rule, **Firoz Shah worked to improve the infrastructure of the empire**. He did this by **building canals, rest- houses and hospitals**, creating and refurbishing **reservoirs and digging wells.**
    - He also **founded several cities**around Delhi, including **Jaunpur, Firozpur, Hissar, Firozabad and Fatehabad.**

- He also **repaired the Qutub Minar,** which had been damaged by an earthquake.
- He **wrote his own autobiography called the 'Futuhat-e-Firozshahi'**.
- Firoz Shah was **indiscriminately benevolent and lenient as a ruler**. He **refused to re-conquer provinces** that had broken away from Muhammad's annexation.
- He **stopped all kinds of harsh punishments, such as cutting off hands,** and **lowered the land taxes** that Muhammad had raised.
- He **sought advice from the Ulemas and ruled as per the Shariat**. He **imposed a number of taxes like the Kharaj, Zakat, Kham and Jaziya**, which were levied **on the non-Muslim subjects.** He also **imposed an irrigation tax** after getting it sanctioned from the Ulema.
- He **provided the principle of inheritance to the armed forces,** where the officers were permitted to rest and send their children into the army in their place.
- He **established the Diwan-i-Khairat** -- **office for charity.**
- He **established the Diwan-i-Bundagan** -- **department of slaves**.
- He **established Sarais (rest house)** for the benefits of merchants and other travelers.
- He **adopted the Iqtadari framework**.

Archaeologist reports Mesolithic-era rock paintings in Guntur

- A Mesolithic period rock painting depicting a person tilling a piece of land has been found during Temple Survey Project (Southern Region) of the Archaeological Survey of India, Chennai, in Orvakallu village in Guntur district, Andhra Pradesh.
- After an intensive exploration, it was noticed that these were shelters for prehistoric humans who lived at this place. Among these five naturally formed caves, two are embellished with distinguished depictions of rock paintings on the back walls and ceilings executed by people of Mesolithic Age, roughly [from] 5000 BC
- The paintings were made with "natural white kaolin and red ochre pigments", as well as that most of them had been "badly damaged" due to exposure to "air and wind".
  - Ochre is a pigment composed of clay, sand, and ferric oxide.
  - Kaolinite is a soft, earthy, and usually white mineral produced by the chemical weathering of aluminium silicate minerals like feldspar.
- One of the paintings depicted a man catching wild goat with his left hand while

wielding a hook-like implement to control it. Another showed two couple standing with their hands raised while a child stood behind them.

- A painted figure of a man holding a plough and appearing to be tilling land -- an indication, in his telling, "of a semi-settled life pattern" in which members of this community domesticated animals and cultivated and harvested crops.
- Earlier, in 2018, archaeologists had uncovered prehistoric rock art estimated to be from the Neolothic era, circa 1500-2000 BC, on natural limestone formations near Dachepalli in Guntur district.

FACTS FOR PREIMS

Declining food imports by most vulnerable countries a cause for concern: FAO

Food and Agriculture Organization (FAO)

- It is a **specialized agency of the United Nations** that leads international efforts to defeat hunger and improve nutrition and food security.
- Its goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.
- **Head Quarter:** Rome (Italy).
- **Member countries:** With 195 members - 194 countries and the European Union, FAO works in over 130 countries worldwide.
- Its sister bodies are the **World Food Programme (WFP)** and the **International Fund for Agricultural Development (IFAD).**
- **Reports published by the FAO:** The State of the World's Forests (SOFO), The State of World Fisheries and Aquaculture (SOFIA), The State of Agricultural Commodity Markets (SOCO), The State of Food Security and Nutrition in the World (SOFI)

Initiatives are taken by the FAO

- The **Codex Alimentarius Commission** is in charge of overseeing the implementation of the Joint FAO/WHO Food Standards Programme.
- Agricultural Heritage Systems of Global **Importance (GIAHS).**
- Monitors the status of **Desert Locusts** all over the world.
- The **International Treaty on Plant Genetic Resources** for Food and Agriculture was adopted by the Thirty-First Session of the Conference of the FAO in 2001.

2023 Global Competitiveness Index: India at 40, Ireland leaps to 2 & Singapore slides to 4

World Competitiveness Index

- The IMD **World Competitiveness Yearbook (WCY**), was first published in 1989.
- It is a comprehensive annual report and worldwide reference point on the competitiveness of countries.
- It analyses and ranks countries according to how they manage their competencies to achieve long-term value creation.
- It is based on 336 competitiveness criteria and four factors, namely **Economic performance, Government efficiency, Business efficiency, and Infrastructure.**

- **Denmark, Ireland, and Switzerland** have been named the top three among 64 economies measured for their global competitiveness.
- **India** fell three rungs to **finish 40th** but is still in a better position than it was between 2019-2021 when it was placed 43rd three years in a row.
- India improved in government efficiency but fared slightly poorer than other countries in business efficiency, infrastructure, and economic performance.
- Specifically, the top three measures that helped India in its score are exchange rate **stability, compensation levels, and improvements in pollution control**.

Centre to complete 3D digitisation of museums by year-end

JATAN virtual museum builder

- It is a **digital collection management system** for Indian museums.
- It has been designed and developed by the **Human Centres Design and Computing Group, Centre for Development of Smart Computing**, Pune.
- It is a client-server application with features such as **image cropping, watermarking, unique numbering, and management of digital objects** with multimedia representations.
- It can create 3D virtual galleries and provide public access through web, mobile or touchscreen kiosks.

3D scanning

- It means **analysing a real-world object** or environment to collect three-dimensional data on its shape and possibly its appearance.
- The collected data is then used to construct digital 3D models.

C-DAC

- It is the apex **research and development wing** of the **Ministry of Electronics and Information Technology.**
- It was established in the year 1988.
- Its main purpose was to carry out research and development in Electronics, IT and other associated areas.
- It was setup to build Supercomputers in the context of the denial of the import of Supercomputers by the USA.
- C-DAC build **India's first indigenously built supercomputer Param 8000**in 1991.
- **Applications of Param 8000:** long-range weather forecasting, remote sensing, drug design and molecular modelling.

Like US, UN suspends Ethiopia food aid over diversion of supplies

World Food Programme

- It is a **branch of the United Nations**that deals with hunger eradication and promotes food security in the world.
- It is a member of **the United Nations Development Programme**(UNDP).
- It is operating in more than 120 countries, which provides food assistance during emergencies and works with communities to enhance nutrition and generate resilience.
- It has been functioning **in India since 1963.**
- Funding:WFP is funded by **voluntary donations** from governments, corporates and private donors.
- Report released by the WFP is **Global Report on Food Crisis**
    - The Global Report on Food Crises describes the scale of acute hunger in the world.
    - It provides an analysis of the drivers that are contributing to food crises across the globe.
    - The report is produced by the Global Network against Food Crises, an international alliance working to address the root causes of extreme hunger.

INS Trishul visits port Anjouan, Comoros

INS Trishul:

- It is the second frigate of **the Talwar class** of the Indian Navy.
- It is the guided missile frigate, that joined the arsenal of the Indian Navy in 2003.

Talwar class of frigates:

- These have been built in Russia under an **Indo-Russian joint production.**
- These missile frigates are **modified Krivak III class** frigates from Russia.
- It has a displacement **capacity of 4,000 tons and a speed of 30 knots** and is capable of accomplishing a wide variety of naval missions, primarily, finding and eliminating enemy submarines and large surface ships.
- Due to the use of stealth technologies and a special hull design, the resulting frigate features **reduced radar cross section (RCS)** as well as electromagnetic, acoustic and infrared signatures.

Apollo Hospitals,launched the Da Vinci Xi Robotic Surgical System.

Da Vinci Robotic Surgical System:

- **It is a tool** that **helps surgeons perform a variety of surgeries** including gynecological surgeries, urological, head and neck, thoracic, colorectal, cardiac and general surgeries.
- Because the **da Vinci only uses small cuts**, it's **less traumatic on your body**, resulting in **less pain, fewer complications** and a **shorter recovery time.**
- It can be **used in the field of colorectal surgeries, urology, oncology, gynaecology thoracic**, cardiology, paediatric and gastro-intestinal surgeries, kidney transplants and in liver transplantation.
- The machine is **made up of three different parts**:
    - **The console/control center:** The **surgeon operates while seated at a console unit**, using hand and foot controls and with a magnified, 3D, high-definition view.
    - **The patient cart:** The cart **holds surgical instruments and the camera**.
    - **The vision cart:** This cart **has a video screen so that the healthcare providers** in the room **can see what's happening during the surgery**.

Da Vinci surgery

- A Da Vinci surgery is **when your surgery is performed using the da Vinci Surgical System**, a **machine that uses four thin robotic arms**.
- The robotic instruments have a **wider range of motion than the human hand**. Surgeons **can use the surgical system for a variety of procedures.**
- **What's the difference between a da Vinci surgery and an open surgery?**
    - Use of the da Vinci system **makes your surgery "minimally invasive" (smaller incisions).**
    - The procedure uses **small cuts** (less than or equal to 1 centimeter long), **tiny surgical instruments, fewer stitches and a laparoscope** (a telescope) which is a thin tube with a light and a camera lens.
    - This is **different than traditional surgeries that use larger, more invasive cuts** through skin, tissues and muscles.

Over 180 Adi Kailash pilgrims rescued from landslide-hit road stretch

Adi Kailash:

- It is considered to be **one of the five Kailash mountains** and is believed to be the **abode of Lord Shiva.**
- It is also **known as Shiva Kailash**, **Chota Kailash, Baba Kailash**, or **Jonglingkong Peak**.
- **Location**:

- It is located in the **Pithoragarh district of Uttarakhand**.
- It is situated among the **Kumaon Himalayan** mountain range.
- It lies in **close proximity to the Indo-Tibetan border near Sin La Pass.**

- **Altitude: 6310 meters**
- Adi Kailash is known as the **replica of Kailash Mansarovar**. It is immensely popular among **devotees of Shiva**.
- It is **scripted in Hindu Mythology that Shiva meditated and stayed at Adi Kailash** for some time.

Pancha Kailash

- These are the **five holy peaks that are said to be the abodes of Lord Shiva.**
- The five peaks are **Kailash Manasarovar, Adi Kailash, Kinnaur Kailash, Shrikant Mahadev Kailash and Manimahesh Kailash**.

UN agency for Palestine refugees on verge of financial collapse

The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA):

- It is a **UN agency that supports the relief and human development of Palestinian refugees.**
- It was **established in 1949** when nearly three-quarters of a million Palestinians became refugees **in the aftermath of the 1948 Arab- Israeli war.**
- **Mandate**: To **support Palestinian refugees and their patrilineal descendants who fled** or were expelled **from their homes during the 1948 Palestine War** and 1967 Six-Day War.
- UNRWA was **originally designed as a temporary agency**, though its **mandate has been continuously renewed every three years** by the General Assembly.
- **Services provided:** It's **services encompass education, health care, relief and social services, camp infrastructure and improvement, microfinance and emergency assistance**, including in times of armed conflict.
- **Fields of operations:** It provides services in its **five fields of operations: Jordan, Lebanon, Syria, Gaza Strip and West Bank, including East of Jerusalem.**
- UNRWA is unique in that **it delivers services directly to its beneficiaries.**
- **Funding**: It is **funded almost entirely by voluntary contributions** from UN Member States. It **also receives some funding from the Regular Budget of the United Nations**.
- It **reports only to the UN General Assembly**.
- **Headquarters**: It was **originally headquartered in Beirut, Lebanon**, but was

moved to Vienna, Austria, in 1978. **In 1996 the General Assembly moved the agency to the Gaza Strip** to demonstrate the Assembly's commitment to the Arab-Israeli peace process.

- **Its chief officer, the commissioner-general—the only leader of a UN agency to report directly to the General Assembly—is appointed by the UN secretary-general** with the approval of an Advisory Commission.

Shanan project can generate ₹200 cr annually: Himachal CM

Shanan Powerhouse:

- **Location**: It is located in **Joginder Nagar** in the **Mandi district of Himachal Pradesh.**
- **Commissioned in 1932**, the powerhouse was c**onstructed as per a 99-year lease** executed **between Raja Jogendra Sen, the then king of Mandi**, **and Col BC Batty, Chief Engineer of the Punjab Government, in 1925.**
- This powerhouse was **constructed against the backdrop of dense deodar forests**.
- It is **one of the oldest** powerhouses of the country, which **used to feed the entire undivided Punjab, Lahore and Delhi before Independence.**
- **After the reorganisation of states in 1966, the Shanan powerhouse was given to Punjab** by the Centre as the lease agreement, signed in 1925 was yet to expire.
- The **project originally was of 48 MW capacity**, but the Punjab government enhanced its capacity to 60 MW in 1982. **Later, 50 MW more was added to make its capacity 110 MW.**
- The **main attraction of the hydro project is the four-stage haulage trolley service**. It was basically constructed **for carrying construction material of Shanan powerhouse** from Jogindernagar to Barot. It is a **unique type of trolley based on pulley system with no engine**, steering wheel or no gears or brakes.

What is train 'Kavach' and why is it trending after Odisha train accident?

Kavach System:

- It is an **indigenously developed Automatic Train Protection (ATP) system**.
- Kavach was **developed by the Research Design and Standards Organisation (RDSO) under Indian Railway (IR)** in collaboration with Medha Servo Drives Pvt Ltd, HBL Power Systems Ltd and Kernex Microsystems.
- It is a **set of electronic devices and Radio Frequency Identification devices** installed in locomotives, in the signalling system as well the tracks, **that talk**

to each other using ultra-high radio frequencies to control the brakes of trains and also alert drivers, all **based on the logic programmed** into them.

- Since 2016, the railways have been carrying out field tests for Kavach on passenger trains.
- **Applications:**
    - It has been designed to **assist locomotive pilots in avoiding Signal Passing At Danger (SPAD) and overspeeding.**
    - The system can **alert the loco pilot, take control of the brakes and bring the train to a halt automatically when it notices another train on the same line** within a prescribed distance.
    - The device **also continuously relays the signals ahead to the locomotive**, making it **useful for loco pilots in low visibility.**
    - It also **controls the speed of the train by an automatic application of brakes in case the loco pilot fails to do so.**
    - It **helps the loco pilot in running the train during inclement weather conditions** such as dense fog.

What is a sonic boom? Blast heard across Washington, D.C., after F-16 fighter jets scramble to intercept plane

- A sonic boom is a **thunderous noise caused by an object**, like an aircraft, **moving faster than the speed of sound.**
- **How is it formed?**
    - As the **object zooms through the sky, the air molecules around it are pushed aside with tremendous force**, **generating shock waves** along its flight path.
    - The **release of pressure, following the shock waves' buildup, is heard as the sonic boom.**
    - Sonic booms **create huge amounts of sound energy.**
- The **intensity** of the sonic boom is **determine**d not only by **the distance between the craft and the ground but also by the size and shape of the aircraft, the types of maneuvers that it makes, and the atmospheric pressure**, temperature, and winds.
- Generally, a **larger aircraft will cause stronger shock waves**, and therefore, a louder sonic boom.
- **If the aircraft is especially long, double sonic booms might be detected**, one emanating from the leading edge of the plane and one from the trailing edge.
- **Sonic booms can shatter glass, but there is generally little risk for people**

on the ground.

Amchang Wildlife Sanctuary: Army generates unique ecosystem for peaceful co-existence with wild elephants

Amchang Wildlife Sanctuary:

- It is located in the **state of Assam.**
- It comprises three Reserve forests-Khanapara, Amchang, and South Amchang.
- It stretches from the **Brahmaputra River in the north** to the hilly forests of Meghalaya in the south, forming a continuous forest belt through Meghalaya's Maradakdola Reserve Forests.
- Flora: Khasi Hill Sal Forests, **East Himalayan Mixed Deciduous Forest**, Eastern Alluvial Secondary Semi-evergreen Forests and East Himalayan Sal Forests.
- Fauna: Flying fox, Slow loris, Assamese macaque, Rhesus macaque, Hoolock gibbon, Porcupine. White-backed Vulture, Slender-billed Vulture.
- Tree yellow butterflies (gancana harina) are found at the Amchang wildlife sanctuary which is indigenous to Thailand, Malaysia, Singapore and northeast India

Govt to utilise PACS as 'drone entrepreneurs' for spraying fertilisers

Primary Agricultural Credit Societies (PACS)

- These are **village-level cooperative credit societies** that serve as the **last link in a three-tier cooperative credit structure.**
- These are **headed by the State Cooperative Banks (SCB) at the state level.**
- **Credit from the SCBs is transferred to the district central cooperative banks**, or **DCCBs**, that operate at the district level.
- These **DCCBs work with PACS**, **which deals directly with farmers.**
- **Individual farmers are members of the PACS**, and **office-bearers are elected from within them.** A village can have multiple PACS.
- The **main function** of the PACS is to **provide short and medium-term purpose loans to its members.**
- **Other functions include:**
    - **Supplying of agricultural inputs** including seeds, fertilisers, insecticides, etc.
    - **Maintaining the supply of the light machinery** for the agricultural purpose.
    - **Providing marketing facilities** that could enhance the sale of their

agricultural products.

- **Promote savings habits** among its members.

Sonowal launches 'Sagar Samriddhi' system to track dredging activity

Sagar Samriddhi

- It is an **online dredging monitoring system**.
- The new system **aims to tighten the monitoring regime for dredging contracts** and also **focus on monetising dredged material**.
- It is **part of the government's** efforts to expedite the **'Waste to Wealth' initiative.**
- This system has been d**eveloped by National Technology Centre for Ports, Waterways and Coasts (NTCPWC)** the technological arm of MoPSW.
- The new technology brings **marked improvement against the old system** of the Draft and Loading Monitor (DLM) system.
- **All future monitoring at the major ports** in the country **will be done through the Sagar Samriddhi monitoring system,** which will help in project implementation and cut costs.
- The system will aid in **daily and monthly progress visualisation, monitor dredger performance and downtime monitoring**, and **keep track of location data**.
- The system will **bring in synergy among multiple input reports** like daily dredging reports, and the pre and post-dredging survey data before processing and producing real-time dredging reports.

Dredging

- Dredging is the **removal of sediments and debris from** the bottom of lakes, rivers, harbours, and other **water bodies.**
- It is a **routine necessity in waterways around the world because sedimentation**—the natural process of sand and silt washing downstream—**gradually fills channels and harbours.**

PM Modi inaugurates first National Training Conclave in Delhi

National Training Conclave

- **The conclave is part of the** National Programme for Civil Services Capacity Building (NPCSCB) - **'Mission Karmayogi'.**
- **Objective**: To **foster collaboration among civil services training institutes** and **strengthen the training infrastructure for civil servants** across the country.
- The Conclave is being **hosted by the Capacity Building Commission.**

- **More than one thousand 500 representatives from various training institutes**, including Central Training Institutes, State Administrative Training Institutes, Regional and Zonal Training Institutes, and Research institutes, **will participate in the conclave.**
- **Civil Servants from the Central government departments, State governments, and local governments,** as well as experts from the private sector, will take part in the deliberations.
- The **Conclave will have eight-panel discussions**, each focusing on **key concerns related to Civil services training institutes** such as faculty development, training impact assessment, and content digitisation.

Mission Karmayogi

- Mission Karmyogi, or National Programme for Civil Services Capacity Building (NPCSCB), **aims to prepare Civil Servants for the future by making them more creative, constructive & innovative** through transparency and technology.
- This unique programme will **help to lay the foundation for civil servants** in the country.
- There will be **more focus on 'on-site learning' in complementing "off-site learning**".
- **Executing Bodies:**
    - It will be **steered by four new bodies.**
    - The new entities will be a **Prime Minister's Public Human Resources Council**, a **Capacity Building Commission**, a **Special Purpose Vehicle (SPV)** that will own and operate the digital assets and technological platform for online training, and a **Coordination Unit**, which will be headed by the Cabinet Secretary.

Operation Amanat: RPF Recovers Assets Worth ₹51.13 Lakh Of 119 Passengers In May 2023

Operation Amanat

- Under the Operation Amanat initiative, the **Railway Protection Force has** taken a novel **initiative to make it easier for the passengers to get back their lost luggage**.
- **It helps to track lost belongings of passengers.**
- The **details of lost luggage** along with photos **are uploaded by RPF personnel of the respective Divisions.** The details are **uploaded in the web portal** in the tab of divisions under the link "Mission Amanat – RPF".
- **Passengers can check whether their luggage** which went missing or **was lost**

in railway premises or trains is available at the Lost Property Office centres at stations.

Railway Protection Force (RPF)

- RPF is a **security force of India** entrusted with **protecting railway passengers, passenger area and railway property** of the Indian Railways.
- It was **established by the Railway Protection Force Act, 1957.**
- This is **only central armed police force** (CAPF, commonly known as Para-Military force) which has **power to arrest, investigate and prosecute criminals.**
- It is **under the authority of Ministry of Railways (India).**
- **All the officers** of RPF **are members of the Indian Railway Protection Force Service (IRPFS)** and are **recruited through UPSC Civil Services** Examination.
- It is **headed by the Director General (DG).** However, the **post of Director-General** of RPF is **held on deputation by a senior Indian Police Service (IPS)** officer.

Diego Garcia: The tropical island 'hell' for dozens of stranded migrants

- It is a coral atoll, the largest and southernmost member of the **Chagos Archipelago**, in the **central Indian Ocean.**
- It is a part of the **British Indian Ocean Territory**.
- It consists of a V-shaped sand-fringed cay and its lagoon is open at the north end.
- This island was **discovered by the Portuguese** in the early 16th century.

Chagos Archipelago

- It is part of the **British Indian Ocean Territory** (BIOT) and Mauritius claims the archipelago as its own.
- In 1810, Mauritius was **captured by the United Kingdom** and France ceded the territory in the Treaty of Paris.
- In 1965, three years before Mauritius got its independence, Britain separated the Chagos islands to carve out a 'British Indian Ocean Territory'.
- In 1966, the **UK leased Diego Garcia** (the biggest island in the Chagos archipelago) to **the US to create an air & naval base**. For constructing the defence installation, the inhabitants of the island were forcibly removed. In 1968 Mauritius was granted independence.
- In June 2017, the UN General Assembly adopted a resolution calling on the ICJ to deliver an advisory opinion on whether the continued administration of the Chagos Archipelago by the United Kingdom following the 1968 decolonisation process of Mauritius was lawful.

- In February 2019, the International Court of Justice (ICJ) issued an advisory opinion that Britain has an obligation to end its administration of the Chagos Archipelago — home to the U.S. military base of Diego Garcia — and complete the process of decolonisation of Mauritius.

Japan intercepts Chinas's Y-9DZ electronic-warfare aircraft over Pacific Ocean

Y-9DZ Electronic Warfare Aircraft

- The Y-9DZ is **China's newly developed electronic warfare version of the Y-9 aircraft**.
- It is a **medium-range, medium-sized tactical transport aircraft manufactured by the Shaanxi Aircraft Company.**
- The Y-9DZ was **initially spotted in 2017**, and China **officially unveiled** this aircraft **in 2019,** along with another electronic warfare variant known as the Y-9G.
- The Y-9DZ variant is the **most advanced intelligence-gathering aircraft developed by China.**
- This aircraft is **capable of flying various special missions**, including electronic intelligence, communication jamming, psychological operations missions and even surveillance missions during search and rescue operations.
- **Features:**
    - It features **state-of-the-art sensors and communication systems.**
    - The Y-9DZ boasts **two large rectangular-shaped ESM/ELINT** (Electronic Support Measures and Electronic Intelligence) **antennas on each side of the rear fuselage** and a **range of other antennas strategically placed** throughout the aircraft.
    - An **oval dish-shaped ESM antenna is positioned atop the vertical fin**, while a **SATCOM antenna** sits on the mid-fuselage.
    - **Presence of pipe-shaped antennas** on the fuselage side suggests their purpose **may be related to PSYOP operations** (psychological operations).

Centre to complete 3D digitisation of museums by year-end

JATAN virtual museum builder

- It is a **digital collection management system** for Indian museums.
- It has been designed and developed by the **Human Centres Design and Computing Group, Centre for Development of Smart Computing**, Pune.
- It is a client-server application with features such as **image cropping, watermarking, unique numbering, and management of digital objects** with

multimedia representations.

- It can create 3D virtual galleries and provide public access through web, mobile or touchscreen kiosks.

3D scanning

- It means **analysing a real-world object** or environment to collect three-dimensional data on its shape and possibly its appearance.
- The collected data is then used to construct digital 3D models.

C-DAC

- It is the apex **research and development wing** of the **Ministry of Electronics and Information Technology.**
- It was established in the year 1988.
- Its main purpose was to carry out research and development in Electronics, IT and other associated areas.
- It was setup to build Supercomputers in the context of the denial of the import of Supercomputers by the USA.
- C-DAC build **India's first indigenously built supercomputer Param 8000**in 1991.
- **Applications of Param 8000:** long-range weather forecasting, remote sensing, drug design and molecular modelling.

Indonesia's Anak Krakatau Volcano Erupts, Spews Ash, Lava

Anak Krakatau volcano

- This volcano island is located in **Indonesia's Sunda Strait between the main Java and Sumatra islands.**
- Anak Krakatau, which means "**child of Krakatau,"** is the offspring of the famous Krakatau, whose monumental eruption in 1883 triggered a period of global cooling.
- It was the longest eruption since the explosive collapse of the mountain caused a deadly tsunami in 2018

Sunda Strait

- The Sunda Strait is the strait between the Indonesian islands of Java and Sumatra.
- It connects the **Java Sea to the Indian Ocean.**
- Numerous volcanic islands lie in the strait.

MSDE certifies 98 Trainers trained in the cluster-based Training of Trainers project under the SANKALP programme

SANKALP Programme:

- The **Skills Acquisition and Knowledge Awareness for Livelihood Promotion** (SANKALP) programme was launched in 2018.
- **Nodal Ministry:** Ministry of Skill Development and Entrepreneurship (MSDE)
- It is a **World Bank loan-assisted project** and is aligned with the overall objectives of the National Skill Development Mission (NSDM).
- The project focuses on **transforming the overall skilling ecosystem of India**, covering both central and state-level agencies for improved outcomes.
- It also encourages innovative **best practices at the local level,** resulting in enhanced access, quality and capacity in the skilling ecosystem and improved access to and completion of **skills training for female trainees** and other **disadvantaged groups.**
- **Strategy:** Under SANKALP four key result areas have been identified viz –
    - Institutional Strengthening (at National, State & District level)
    - Quality Assurance Quality Assurance of skill development programs;
    - Inclusion of marginalised population in skill development; and
    - Expanding Skills through Public-Private Partnerships (PPPs).

The Hiroshima process that takes AI governance global

Hiroshima AI Process (HAP)

- It is an effort by the G7 bloc to determine a way forward to regulate **artificial intelligence (AI).**
- It also encourages international organisations such as the OECD to consider the analysis of the impact of policy developments and the **Global Partnership on AI (GPAI) to conduct practical projects.**

Global Partnership on AI (GPAI)

- It is a **multi-stakeholder initiative** which aims to bridge the gap between theory and practice on AI by supporting cutting-edge research and applied activities on AI-related priorities.
- **Launched in June 2020 with 15 members,** GPAI is the fruition of an idea developed within the G7.
- At present, it has 29 members and **India is also a member of this initiative.**
- Its secretariat is at the **Organisation for Economic Cooperation and Development (OECD)**

PM lauds new initiative of celebrating 'Pradhan Mantri Matru Vandana Yojana' as 'God Bharai' ceremony in Dausa, Rajasthan

PM Matru Vandana Yojana

- It is a **Centrally Sponsored Direct Benefit Transfer** (DBT) scheme launched in 2017.
- **Objectives**
  - Providing **partial compensation for the wage loss** in terms of cash incentive, so that the woman can take adequate rest before and after delivery of the first child
  - To **improve health-seeking behaviour** amongst Pregnant Women & Lactating Mothers (PW&LM).
- **Features**
  - The scheme is to provide maternity benefits to women belonging to **socially and economically disadvantaged sections of society**.
  - The maternity benefit is to be provided to a woman **for the first two living children** provided the second child is a girl
  - Under this scheme **monetary benefit of Rs. 5,000** is given to the expecting mothers from the time of the **initial stage of pregnancy to till the time the child is born.**
  - Additionally, Rs. 1,000 is provided **under the Janani Suraksha Yojana** post-**institutional delivery.**
  - The Rs. 5,000 is provided in **three installments.**
  - The first installment of Rs. 1,000 is paid **at the time of registration** of the pregnancy.
  - The second installment of Rs. 2,000 is paid at **the time of completing 6 months of pregnancy** and receiving at least one antenatal checkup.
  - The third installment of Rs. 2,000 is received after the birth and registration of birth of such child and after such child receives the first cycle of **immunization for BCG, OPV, DPT and Hepatitis-B.**
  - **Cases of miscarriage/stillbirths** are to be **treated as fresh cases** for providing maternity benefits under the scheme.

India's ASW Shallow Water Craft Project Progresses Amidst Uncertainties

Anjadip Shallow Water Craft:

- It is an **anti-submarine warfare shallow watercraft** vessel built for the Indian Navy.
- It was **built by the Kolkata-based Garden Reach Shipbuilders and Engineers (GRSE).**
- Anjadip is the **third of the eight ships of the contract** that was signed between Garden Reach Shipbuilders and Engineers, Kolkata and the Ministry

of Defence in April 2019.

- The vessel was **named after the island of Anjadip, located off Karwar Port, Karnataka,** signifying its strategic maritime importance.
- It is **designed to undertake anti-submarine operations in coastal waters**, **low intensity maritime operations** and subsurface surveillance among others.
- **Features**:
    - The ship is a **900-ton, 77-metre-long vessel** powered by **water-jet propulsion.**
    - It can achieve a **maximum speed of 25 knots** (46 km/h) and has **an endurance of 1,800 nautical miles** (3,300 km) at 14 knots (26 km/h).
    - The **crew consists of 57 members**, including seven officers and 50 sailors.
    - It is **equipped with an Anti-submarine Combat Suite,** potentially the **DRDO-developed IAC MOD'C', a Hull Mounted Sonar**, and a **Low-frequency Variable depth Sonar.**
    - It also **features a fire control system (FCS), an integrated Platform Management system, an Atomic Power Management system**, and a Battle Damage control system.

Gender bias is a pervasive problem worldwide: UNDP

Gender Social Norms Index (GSNI) 2023

- It quantifies **biases against women,** capturing people's attitudes toward women's roles.
- It tracked people's attitudes towards women in four dimensions: **political, educational, economic and physical integrity.**

GSNI 2023

- The index, covering 85 per cent of the global population, reveals that **close to 9 out of 10 men and women hold fundamental biases against women.**
- **Nearly 90% of people** still hold at least one **bias against women** and 25 per cent of people believe it is justified for a man to beat his wife.
- Countries with **greater bias** in gender social norms also show a **lower presence of women in parliament.**
- Indigenous women, migrant women and **women with disabilities** have **meagre political representation**, demonstrating how overlapping biases can further reduce opportunities for women.
- The recent increase in **education achievements has not translated** into better economic outcomes and opportunities for women.

Infrastructure Finance Secretariat(IFS), DEA launches the revamped website of PPPININDIA and online portals for India Infrastructure Project Development Funding Scheme (IIPDF) and the Best Practices in Infrastructure

IIPDF Scheme

- It is a **Central Sector Scheme** which will **aid the development of quality PPP projects** by providing necessary funding support to the project sponsoring authorities, both in the **Central and State Governments.**
- **Funding:**
    - The corpus of the IIPDF shall comprise of **initial budgetary outlay of Rs. 100** Crore by the Ministry of Finance.
    - Funding under IIPDF Scheme is in addition to the already operational Scheme for Financial Support to PPPs in Infrastructure (VGF Scheme).
- **Composition of the IIPDF approval committee:**
    - **Chairperson:** Joint secretory, DEA
    - Representative of NITI Aayog
    - **Member Secretary**: Deputy Secretory/Private Investment Unit, DEA
- **The approval committee will**
    - Select projects for which project development costs will be funded.
    - **Set the terms and conditions** under which the funding will be provided and recovered.
    - **Set milestones for disbursing** and recovering (where appropriate) the funding.
- The **Public-Private Partnership Cell** of the DEA will provide support functions to examine the applications received for assistance under IIPDF.

India's biggest natural arch formed 184 million years ago discovered in Odisha by GSI

- The state unit of the Geological Survey of India (**GSI**) has **proposed to declare the 'Natural Arch' in the Kanika range** of Sundargarh forest division, **a Geo Heritage Site.**
- If it is done, **it will be the biggest natural arch of the country to have the Geo Heritage tag.**
- Apart from the arch at Sundargarh, **India has two others- one at Tirumala hills** in Tirupati and **another at Andaman and Nicobar**. However, **both of them are smaller** compared to the one in Sundargarh.

India's Biggest Natural Arch

- The Sundargarh natural arch, **present in the ferruginous sandstone** of the

Upper Kamthi formation, **dates back to about 184 to 160 million years in the lower to middle Jurassic age**.

- It is an **oval-shaped arch** and **has a length of 30 metres at the base** and **is 12 metres high**.
- The **alcove of the natural arch has a maximum height and width of 7 metres and 15 metres**, respectively.
- The natural arch and its **surrounding area are a storehouse of different primary sedimentary structures** like planner and cross-bedding along with occasional current ripples signifying high energy fluvial environment during sedimentation.
- **Formation**: Formation of the natural arch **could be due to fault activities and the nature of lithotype,** which have **enhanced the process of sub-aerial weathering** over a long period.

Geo Heritage Sites (GHSs)

- Geoheritage sites are **sites of rare and unique geological, geo-morphological, mineralogical, petrological, and paleontological significance,** including caves and natural rock sculptures of national and international interest.
- **GSI declares geo-heritage sites**/ national geological monuments **for protection and maintenance.**
- **GSI or the respective State governments take necessary measures** to protect these sites.

Future LoCs to Africa could cover defence, says EXIM Bank MD

Export-Import Bank of India (EXIM Bank)

- It is the **premier export finance institution of the country**.
- **It was established** by the Government of India, **under the Export-Import Bank of India Act, 1981**
- EXIM Bank **wholly owned by the Government of India**.
- **Services**:
    - EXIM Bank **provides financial assistance to exporters and importers**.
    - It **extends Lines of Credit (LOCs) to overseas financial institutions, regional development banks, sovereign governments and other entities overseas**, to enable buyers in those countries **to import** developmental and infrastructure projects, equipment, **goods and services from India, on deferred credit terms**.
    - It functions as the **principal financial institution for coordinating the work of institutions engaged in financing export and import** of goods and services with a view to promoting the country's international trade.

- **Structure:**
    - The operations of the Bank are **governed by a Board of Directors.**
    - The Board of Directors c**onsists of a chairman, a managing director, two deputy managing directors; one director** each nominated by the Reserve Bank of India; IDBI Bank Ltd. and ECGC Ltd.; and **not more than 12 directors nominated by the Central Government.**

Line of Credit (LoC)

- It is a **preset borrowing limit that can be tapped into at any time.**
- All LOCs **consist of a set amount of money that can be borrowedas needed, paid back, and borrowed again.**
- The borrower **can take money out as needed until the limit is reached.**
- As money is repaid, it can be borrowed again in the case of an open line of credit.

IEA to review all conditions for India's membership

International Energy Agency

- It is an autonomous **inter-governmental organisation** within the **OECD framework.**
- It works with governments and industry to **shape a secure and sustainable energy future for all.**
- It was founded in 1974 to ensure the **security of oil supplies.**
- It was created in response to the 1973-1974 oil crisis when an oil embargo by major producers pushed prices to historic levels and exposed the vulnerability of industrialised countries to dependency on oil imports.
- It consists of **31 member countries and eleven association countries.**
- A candidate country to the IEA **must be a member country of** the **Organisation for Economic Co-operation and Development(OECD).**
- **Criteria for membership**
    - Crude oil and/or product **reserves are equivalent to 90 days** of the previous year's net imports, to which the government has immediate access (even if it does not own them directly) and could be used to address disruptions to global oil supply.
    - A demand restraint programme to **reduce national oil consumption** by up to **10%.**
    - Legislation and organisation to operate the **Co-ordinated Emergency Response Measures (CERM) on a national basis.**
    - Legislation and measures to ensure that all oil companies under its

jurisdiction report information upon request.
    - Measures are in place to ensure the capability of contributing its share of an IEA collective action.
- **India** joined this organization in 2017 as an **Associate member.**
- **Reports published by IEA**: World Energy Outlook, World Energy Balances, Energy Technology Perspectives, World Energy Statistics and Net Zero by 2050.

Vice President Jagdeep Dhankhar to confer 4th National Water Awards in New Delhi

- The first edition of the National Water Awards was introduced by the **Department of Water Resources, River Development and Ganga Rejuvenation in 2018.**
- They have provided a **good opportunity for start-ups** as well as leading organizations to engage and deliberate with senior policymakers on how to adopt the best water resources management practices in India.
- These awards have been instituted to **recognize and encourage exemplary** work and efforts made by **States, Districts, individuals, organizations**, etc across the country in attaining the vision of a 'Jal Samriddh Bharat'.
- It covers **11 categories** Best State', 'Best District', 'Best Village Panchayat', 'Best Urban Local Body' etc.
- The award winners in different categories will be given **a citation, trophy and cash prize**.
- The cash prizes for the 1st, 2nd, and 3rd rank winners are Rs.2 lakhs, Rs.1.5 lakhs, and Rs.1 lakh, respectively.
- **Nodal Ministry**: Ministry of Jal Shakti.

Russia promises to remove all hurdles choking new route linking Saint Petersburg with Mumbai

International North-South Transport Corridor (INSTC)

- INSTC is a **multi-modal transportation route linking the Indian Ocean and the Persian Gulf to the Caspian Sea via Iran and onward to northern Europe** via St. Petersburg **in Russia.**
- The corridor **includes seaports** on the Persian Gulf and in the Caspian region, **as well as road and rail routes.**
- **Aim:** The main purpose of the corridor was to **reduce carriage costs and transit time between India and Russia.** The transit time is **expected to reduce to almost half**, once the corridor becomes fully functional.
- **Development**:

- It was **first mooted in 2000**. The idea was to **build a transport corridor linking Russia's Baltic Sea coast to India's western ports** in the Arabian Sea via Iran.
- **Russia, India and Iran signed preliminary agreements** to develop the **7,200-km-long** International North-South Transport Corridor (NSTC) **in 2002.**
- Three years later, **Azerbaijan signed up** for the project.
- This agreement was **eventually ratified by 13 countries** — **India, Russia, Iran, Azerbaijan, Belarus, Bulgaria, Armenia, Kazakhstan, Kyrgyzstan, Oman, Tajikistan, Turkey and Ukraine.**

- **Route**: The multimodal route **begins in Mumbai**, India and g**oes to Bandar Abbas and Bandar-e-Anzali in Iran**, **then crosses the Caspian Sea to reach Astrakhan, Moscow, and St. Petersburg in Russia.**

IIT Madras researchers devise a mathematical model that promises equal benefits to both farmers & agri-firms

Prospect Theory

- It is a psychology theory that **describes how people make decisions when presented with alternatives that involve risk, probability, and uncertainty**.
- The theory was **introduced by two psychologists, Daniel Kahneman, and Amos Tversky**, **to describe how humans make decisions when presented with several choices**.
- It holds that **people make decisions based on perceived losses or gains.**
- Prospect theory **assumes that losses and gains are valued differently**, and thus **individuals make decisions based on perceived gains instead of perceived losses**. Individuals are particularly averse to losing what they already have and less concerned to gain.
- **Also known as the "loss-aversion" theory**, the general concept is that **if two choices are put** before an individual, **both equal, with one presented in terms of potential gains and the other in terms of possible losses, the former option will be chosen**.
- For example, most people prefer winning $50 with certainty rather than taking a risky bet in which they can toss a coin and either win $100 or nothing.
- **Applications:**
  - The theory finds application in **behavioural finance and economics.**
  - It is used to **evaluate various aspects of political decision-making in international relations.**

Centre unveils "Dugdh Sanakalan Sathi Mobile App" to revolutionize dairy industry

Dugdh Sankalan Sathi App

- This is designed and developed by Rajasthan Electronics & Instruments Limited (REIL), a "Mini Ratna" Central Public Sector Enterprise under the Ministry of Heavy Industries.
- It aims to improve the quality of milk, foster transparency among stakeholders, and streamline operations at the grassroots village level, including Milk Cooperative Societies.
- This will inform all services to milk producers in English, Hindi, Punjabi, Telugu and other languages
- Increased **transparency** among stakeholders
- Online monitoring of daily milk poured at Milk Cooperative Societies
- **Real-time milk price updates** from the cloud server, ensuring transparency and eliminating human errors
- **Direct beneficiary transfers** of milk payments and government subsidies to the milk producers' bank accounts through the app
- Push notifications for milk collection to the milk producers' app

CBIC releases National Time Release Study 2023 report

National Time Release Study (NTRS) 2023 report:

- It is a **performance measurement tool.**
- It aims to present a quantitative measure of **the cargo release time** at the Customs station.
- It also measures the **domestic clearance in case of imports** and the arrival of the cargo at the Customs station to the eventual departure of the carrier in case of **exports.**
- The study included **seaports, air cargo complexes** (ACCs), inland container depot (ICDs) and **integrated check posts (**ICPs) which handles the maximum per cent of bills of entry in the country.

Highlights

- It reaffirms **the 'Path to promptness'**e. comprising **advance filing of import documents** enabling pre-arrival processing, **risk-based facilitation of cargo** and **benefits of trusted client programme.**
- Cargoes wherein all the three features under the Path to Promptness are combined, achieve the **National Trade Facilitation Action Plan (NTFAP)** release time target across all port categories.

- It has placed a much greater focus on the **measurement of export release time.**
- It recognises the distinction between regulatory clearance (also referred to as customs release), which gets completed with the grant of **Let Export Order** (LEO) and the wider aspect of physical clearance which occurs on completion of logistics processes with the departure of the carrier with the goods.

Emerging monkeypox outbreaks in Asia-Pacific region

- **What it is?** It is a **viral disease** that primarily spread to the human population through zoonotic spillovers, with **rodents and primates** serving as **potential reservoirs.**
- The **first case** in humans was reported in 1970 in the **Democratic Republic of Congo.**
- **Transmission:** It can be transmitted between humans through close contact and exposure to infected bodily fluids or lesions.
- **Incubation period:** The incubation period (the period between exposure to an infection and the appearance of the first symptoms) of monkeypox is usually from 6 to 13 days but can range from 5 to 21 days.
- **Symptoms:** Common symptoms of mpox are a **skin rash or mucosal lesions,** Fever, rash and swollen lymph nodes which may lead to a range of medical complications.
- There is **no effective vaccine** available for Monkeypox infection.

Soul of Steel Himalayan Challenge concludes

Soul of Steel Himalayan Challenge

- The challenge s**upported by the Indian Army in collaboration with Conquer Land Air Water (CLAW) Global** was **launched** by defence minister **on January 14 at Dehradun**.
- The campaign was **initiated on the 120th Raising Year of the 9 (Independent) Mountain Brigade.**
- It was **based on the lines of the 'Ironman triathlon'**, a long-distance triathlon held in Europe which tests an individual's physical capabilities.
- The initiative is **aimed at enabling life skill training and youth development**. It is also expected to **boost global promotion of adventure tourism in Uttarakhand.**
- It was a **unique blend of specialised skills**, including **high altitude mountaineering, extreme cold survival, psychological and physical endurance**.

- The challenge **opened the domain of niche military skills to an average person**, who wishes to challenge their physical and psychological limits.
- It attracted interest from 1,401 (including 94 women) highly skilled athletes, adventure sports enthusiasts and armed forces aspirants.
- **These applicants were put through a gruelling two-stage screening process**, of which **only 23** (including two women) **were finally chosen** to undergo a **10-week extensive training** in endurance, mountaineering, survival and rescue skills under a joint team of experts from the armed forces and CLAW Global.
- The participants were **trained to operate beyond the assumed limits of their body**, to discover the limitless realms of their mind, consciousness and spirit.
- **In the final phase** of the challenge, **18 'Soul of Steel' warriors set out on a challenge to compete as teams of three along the rugged mountainous terrain of the Garhwals,** at **an altitude of 17,000 feet and covered a distance of 65 km** through glaciers, ice walls, rock faces and snow-capped Himalayan peaks.
- The challenge **tested their self-sustained mountain climbing, survival, navigation skills, psychological endurance and physical toughness.**

India tops globally in LEED Zero certifications of green building projects

LEED Certification

- Leadership in Energy and Environmental Design is the world's most widely used **green building rating system** in the world.
- It is available for virtually all building types.
- This certification provides a framework for healthy, highly efficient, and cost-saving green buildings, which offer environmental, social and governance benefits.
- It is a globally recognized **symbol of sustainability achievement** and leadership.
- To achieve LEED certification, a project earns points by adhering to prerequisites and credits that address **carbon, energy, water, waste, transportation, materials**, health and indoor environmental quality.
- Projects go through a verification and review process by GBCI and are awarded points that correspond to a level of LEED certification: **Certified** (40-49 points), **Silver** (50-59 points), **Gold** (60-79 points) and **Platinum** (80+ points).
- This rating system is **developed** by **the United States Green Building Council (USGBC).**

EESL pledges support to Energy Efficiency projects

Energy Efficiency Services Limited (EESL)

- EESL is **promoted by the Ministry of Power**, Government of India, as a **Joint Venture of four reputed public-sector undertakings NTPC Limited**, **Power Finance Corporation Limited**, **REC Limited** and **POWERGRID Corporation of India Limited.**
- It is **registered under the Companies Act**, 1956 on 10th December 2009.
- EESL was **formed to create and sustain market access to energy efficient technologies**, particularly in public facilities like municipalities, buildings, agriculture, industry etc. and **to implement several schemes of the Bureau of Energy Efficiency**, Ministry of Power **and Ministry of New & Renewable Energy**, Government of India.
- EESL is also **leading the market-related activities of the National Mission for Enhanced Energy Efficiency (NMEEE).**

National Mission on Enhanced Energy Efficiency (NMEEE):

- It is **one of the eight national missions under the National Action Plan on Climate Change (NAPCC).**
- **Aim**: To **strengthen the market for energy efficiency** by **creating a conducive regulatory and policy regime** and envisage fostering innovative and sustainable business models in the **energy efficiency sector**.
- The Mission is **implemented since 2011.**
- **Initiatives under NMEEE:** It **consists of four initiatives to enhance energy efficiency** in energy-intensive industries, which are as follows:
    - **Perform Achieve and Trade Scheme (PAT**): Implementing a market-assisted compliance mechanism to accelerate the implementation of cost-effective improvements in energy efficiency in large energy-intensive industries.
    - **Market Transformation for Energy Efficiency (MTEE)**: Accelerating the shift to energy-efficient appliances in specific applications through innovative measures to make the products more affordable.
    - **Energy Efficiency Financing Platform (EEFP)**: Facilitating Financial Institutions to invest in Energy Efficiency Projects and Programmes.
    - **Framework for Energy Efficient Economic Development (FEEED)**: Developing fiscal instruments to leverage financing for Energy Efficiency through risk mitigation.
- **Implementation agencies:**
- **BEE**: Bureau of Energy Efficiency.

- **EESL**: Energy Efficiency Services Limited

India gifts missile corvette INS Kirpan to Vietnam

- It is an **indigenously-built in-service** missile.
- It is a **Khukri class missile** corvette commissioned into the Navy on January 12, 1991.
- It has a displacement displacing capacity of close to 1,400 tonnes.
- It is capable of a speed of more than 25 knots.
- The Khukri class are **equipped with Diesel Engines** assembled in India.
- The ship is fitted with a medium-range gun, 30 mm close-range guns, chaff launchers, and surface-to-surface missiles.
- It performs a wide variety of roles, including **coastal and offshore patrol**, coastal security, surface warfare, anti-piracy, and Humanitarian Assistance and Disaster Relief (HADR) operations.

NIXI turns 20 in its continuous journey towards digital

National Internet Exchange of India (NIXI)

- It was established in 2003 as a **not-for-profit organization** under **the Companies Act 2013.**
- It is tasked to **increase Internet penetration and adoption** in India by facilitating the various infrastructure aspects to enable the Internet ecosystem to be managed and used by the masses.
- The **four services** which come under the NIXI:
    - **Setting IXPs,** towards Building Internet Exchange Points
    - **.IN Registry** towards building the .in domain digital identity
    - **Indian Registry for Internet Names and Numbers** (IRINN) towards Internet Protocol (**IPv4 and IPv6) addresses adoption**.
    - **Data Centre services** under NIXI-CSC towards data storage services.

Initiatives of NIXI

- **IPv6 Expert Panel (IP Guru):**IP Guru is a group to extend support to all the Indian entities that are finding it technically challenging to migrate and adopt IPv6.
- It's a joint effort of DOT, MeitY & community to promote IPv6.
- **NIXI Academy:** NIXI Academy is created to educate technical/non-technical people in India to learn and relearn technologies like IPv6 which are normally not taught in Educational Institutes.
- **NIXI-IP-INDEX:** NIXI has developed an IPv6 index portal for the Internet

community. This portal will **showcase the IPv6 adoption** rate in India and across the world.

68 People Rescued From Mediterranean Sea By Russian Warship

Mediterranean Sea

- *Location:*
  - It is an **intercontinental sea** that is **bordered by** the continent of **Europe in the north**, by **Asia in the east,** and by **Africa in the south.**
  - In the west, the **Mediterranean Sea is connected to the Atlantic Oceanvia the narrow Strait of Gibraltar.**
  - In the extreme northeast, it is **connected to the Black Sea via the Dardanelles Strait, the Sea of Marmara, and the Bosporus Strait**.
  - The Mediterranean Sea is also **connected to the Red Sea via the Suez Canal** in the southeast.
- *History:*
  - It has been regarded as the **birthplace of Western civilization**.
  - **Many ancient civilizations, such as the Phoenicians, Ancient Greece, and the Roman Empire,** were located along the shores of the Mediterranean Sea.
- *Bordering Countries:*
  - **22 countries and one territory** (Gibraltar - a British Overseas Territory) have coasts on the Mediterranean Sea.
  - The **European Countries** are **Spain, France, Italy, Malta, Monaco, Slovenia, Croatia, Bosnia** and Herzegovina, Montenegro, **Albania**, and **Greece**.
  - The **West Asian (Middle Eastern) countries** bordering the Mediterranean Sea are **Turkey, Syria, Lebanon, Israel, the Palestine Gaza Strip**and the divided island of **Cyprus**.
  - Five **North African nations** have coasts on the Mediterranean Sea: **Morocco, Algeria, Tunisia, Libya and Egypt**.
- The Mediterranean Sea offers a staggering **46,000 km (28,600 mi) long coastline** and **includes 15 marginal seas**, **such as the Balearic Sea, the Adriatic Sea**, the Levantine Sea and the Ionian Sea.
- **Depth**: The sea has an **average depth of about 1,500 m** and a **maximum depth of 5,267 m at its deepest point, the Calypso Deep** in the Ionian Sea.
- **Rivers**: A large number of rivers drain into the Mediterranean Sea, including the **Ebro, Rhone, Po, Nile, Tiber, etc.**
- **Islands**: Some of the large Mediterranean Islands include **Corsica, Crete,**

Cyprus, Chios, Euboea, Lesbos, Mallorca, Rhodes, Sicily, and Sardinia. The island of **Sicily is the largest island** in the Mediterranean Sea.

- **Climate**: The region is characterized by the prevailing subtropical climate known as the **Mediterranean climate, with usually mild, wet winters and hot, dry summers.**
- Mediterranean Sea waters are **more saline compared to the waters of the Atlantic**. There is a **continuous movement of water from the Atlantic into the Mediterranean** and vice versa through the Strait of Gibraltar.

Swarm of Honeybees attacks 19 tourists in Dang near Gira Waterfall.

Gira Waterfall:

- It is a **seasonal waterfall in the Western Ghats** of India.
- **Location**: It is located near the **Waghai village** in the **Dang district of Gujarat.**
- It is a **75 ft fall** that **emerges from the Kapri Tributary** and **drops into the Ambika River.**

Ambika River:

- It is a **major westward flowing river** that has a huge **catchment area in two states,** namely **Gujarat and Maharashtra.**
- **Origin**: The river has its origins in the **Saputara Hills**, near Kotambi Village **in the Nasik district of Maharashtra.**
- After flowing for a **length of 136 km** it **drains in to the Arabian Sea.**
- It has a **drainage area of 2715 Sq.km**. The Valsad, Dangs and Surat Districts of Gujarat and a small portion of the Nasik district of Maharashtra falls in the basin.
- **Rainfall**: It **receives most of the rainfall from the South West monsoon** from June to September.
- **Tributaries: Khapri, Valam, Kaveri and Kharear** are main tributaries of Ambika river.

Microsoft admitted it was targeted in a cyber attack claimed by a Russian-linked group called Anonymous Sudan

Distributed Denial-of-Service (DDoS) Attack

- A DDoS attack is a **malicious attempt to disrupt the normal traffic of a targeted server**, service or network **by overwhelming the target** or its surrounding infrastructure **with a flood of Internet traffic.**
- DDoS attacks achieve effectiveness **by utilizing multiple compromised computer systems as sources of attack traffic.**
- **Exploited machines can include computers and other networked**

resources such as IoT devices.

- Unlike other kinds of cyberattacks, **DDoS assaults don't attempt to breach your security perimeter**. Rather, a **DDoS attack aims to make your website and servers unavailable** to legitimate users.
- DDoS **can also be used as a smokescreen for other malicious activities and to take down security** appliances, breaching the target's security perimeter.
- DDoS attacks are **carried out with networks of Internet-connected machines.**
- **These networks consist of computers and other devices** (such as IoT devices) which have been **infected with malware,** allowing them to be **controlled remotely by an attacker.**
- These individual devices are **referred to as bots**(or zombies), and **a group of bots is called a botnet.**
- **Once a botnet has been established**, the **attacker is able to direct an attack** by sending remote instructions to each bot.
- When a **victim's server or network is targeted by the botnet**, **each bot sends requests to the target's IP address**, potentially causing the **server or network to become overwhelme**d, resulting in a denial of service to normal traffic.

DoS vs DDoS

- A DDoS attack is a **subcategory of** the more general **denial-of-service (DoS) attack.**
- In a DoS attack, a **perpetrator uses a single Internet connection to either exploit a software vulnerability or flood a target** with fake requests—usually in an attempt to exhaust server resources.
- On the other hand, **DDoS attacks utilize thousands (even millions) of connected devices** to fulfil its goal.

Production of pest-free fruits with no residues key for exports

Asia Pacific Plant Protection Commission

- It is an **intergovernmental organization** that promotes cooperation among countries in the Asia-Pacific region to enhance **plant health and plant protection.**
- It was established in 1956 as a regional body approved by the Food and Agriculture Organization (FAO) of the United Nations.
- **Member Countries:** The commission consists of **25 member countries, including India.**
- **Structure of the organization:**

- The Commission consists of representatives of all member countries and elects amongst them a **Chairperson** who serves for a **period of two years**.
- The Director-General of the **Food and Agriculture Organization** appoints and **provides the secretariat** that coordinates, organizes and follows up the work of the Commission.
- The Commission, according to its provisions convenes at **least once every two years** and opens for participation to all member countries.

- **Objectives:** The commission coordinates and supports plant protection activities of its Members in Asia and the Pacific, with emphasis on developing regional standards for phytosanitary measures (RSPMs) etc.

Visit of students onboard INS Sutiej towards World Hydrography Day

Hydrography

- Hydrography is the **branch of applied sciences** which deals with the **measurement and description of the physical features of oceans**, seas, coastal areas, lakes and rivers, as well as with the **prediction of their change over time.**
- This is done **mainly with specialised ships and boats operating echo sounders and sonars**, but also using survey aircraft fitted with lasers.
- Useful information can also be **derived sometimes from satellite observations**.
- Hydrography **also involves measuring the tide and the currents.**
- Unlike oceanography, hydrography will i**nclude shore features, natural and manmade, lights and towers** that will **aid in fixing a ship's position**, as well as the physical aspects of the sea and seabed.
- The most **well-known application** of hydrographic information **is for making the nautical charts that all mariners use for navigation.**
- Hydrographic information is r**equired for the safe, efficient and sustainable conduct of every human activity** that takes place in, on or under the sea.

World Hydrography Day

- It is **marked annually on June 21.**
- It is officially recognised and **implemented by the International Hydrographic Organisation (IHO).**
- It serves as a platform to **highlight the crucial work carried out by hydrographers** worldwide and to promote the significance of hydrography itself.
- It aims to **increase public awareness and understanding of hydrography's**

role in ensuring safe and efficient navigation, sustainable marine resource management, and coastal zone development.

- **2023 Theme**: "**Hydrography - underpinning the digital twin of the ocean**."

International Hydrographic Organisation (IHO):

- IHO, one of the oldest **intergovernmental organisations**, was **established in 1921** as a prominent entity **focused on addressing various aspects of marine life**.
- **Functions**:
    - It **works to ensure that all the world's seas**, oceans and navigable **waters are surveyed and charted,** thereby supporting the safety of navigation and the protection of the marine environment.
    - It **coordinates the activities of national hydrographic offices and sets standards** in order to promote uniformity in nautical charts and documents.
    - It **issues survey best practices and provides guidelines** to maximize the use of hydrographic information.
- **Headquarters: Monaco**

Tender issued to start suspended helicopter joyride at Statue of Unity

Statue of Unity

- It was created as a **tribute to the 'Iron Man of India', Sardar Vallabhbhai Patel.**
- **Location**: It is Located in **Gujarat**, by the **banks of River Narmada** on the **River Island of Sadhu** Bet overlooking the Narmada Dam.
- **Height**: The statue, **182-metre tall, is described as the world's tallest** as it exceeds the height of China's Spring Temple Buddha by 177 feet.
- The statue was **built by Indian construction major Larsen & Toubro** (L&T) and **designed by Padma Bhushan-winning sculptor Ram V Sutar**.

Sardar Vallabhbhai Patel

- He was an **Indian barrister and statesman**, one of the l**eaders of the Indian National Congress** during the struggle for Indian independence.
- He was **born on 31st October 1875, in Nadiad, Gujarat.**
- Patel **first made his mark in 1918**, when he **planned mass campaigns of peasants**, farmers, and landowners **of Kaira**, Gujarat, **against the decision of the Bombay government to collect the full annual revenue taxes despite crop failures** caused by heavy rains.
- He was so **influenced by Gandhiji's ideas that in the year 1920, in the non-cooperation movement,** he adopted indigenous Khadi items and started

boycotting foreign clothes.

- **Patel led the Satyagraha movement in Nagpur in 1923**against the British law of banning the hoisting of the Indian Flag.
- **In 1928** Patel successfully **led the landowners of Bardoli** in their resistance **against increased taxes.**
- His efficient leadership of the Bardoli campaign **earned him the title of sardar ("leader").**
- He was appointed as the **first Deputy Prime Minister and Home Minister of India from 1947 to 1950.**
- He is highly **credited for the peaceful integration of the princely Indian states** into the Indian Union and the **political unification of India.**

More Than 30 Feared Dead as Boat Bound for Spain's Canary Islands Sinks

Canary Island

- It is an archipelago located **in the Atlantic Ocean**
- It is about 1300 km South of mainland Spain and 115 km West of the African coast (Morocco).
- The Canaries comprise the Spanish provincias (provinces) of Las Palmas and Santa Cruz de Tenerife.
- These Islands were **formed by volcanic eruptions** millions of years ago.
- They have a subtropical climate. Temperatures are warm and show little seasonal variation.
- It has rich volcanic soils and mild temperatures that support a wide variety of vegetation that generally follows a zonal arrangement based on elevation.

Archipelago

- An archipelago is a term used to **describe a group or chain of islands** that are closely scattered in a body of water, such as a sea, ocean, lake, or river.
- These islands are typically **formed through geological processes** such as volcanic activity, tectonic movements, or the accumulation of sediment.

Titan submersible 'landing frame and a rear cover' found

Titanic tourist submersible

- A submersible is a small boat or other craft, designed especially for research and exploration.
- It is more **limited in its movement and how** long it can stay underwater.
- A submersible **needs a mother ship** that can launch and recover it.
- These are small, limited-range watercrafts designed for a set mission, that are

built with characteristics that allow them to operate in a specific environment

- These vessels are **typically able to be fully submerged in water** and cruise using their own power supply and air renewal system.
- While some submersibles **are remotely operated and essentially manually controlled** or programmed robots, these usually operate unmanned.
- Vessels like the missing Titan are known as human-occupied vehicles.

Submarine

- It is a watercraft that is capable of **independent operation under the sea.**
- It does **not require support ships** because submarines can renew their air and power supplies independently.
- When the submarine is to dive water is filled in water tanks and it is made heavier.
- As soon as the average density of a submarine becomes greater than the density of seawater it sinks.

IFFCO inks pact for export of nano liquid urea to US

Nano Urea

- It is a **nanotechnology-based revolutionary Agri-input that provides nitrogen to plants.**
- It is **developed and patented by** the Indian Farmers Fertiliser Cooperative Limited (**IFFCO**).
- IFFCO Nano Urea is the **only nano fertiliser approved by the Government of India and included in the Fertilizer Control Order (FCO).**
- **Features**:
    - Compared to conventional urea prill, Nano Urea has a **desirable particle size of about 20-50 nm and more surface area (10,000 times over 1 mm urea prill) and the number of particles (55,000 nitrogen particles over 1 mm urea prill).**
    - It **contains 4.0 % total nitrogen (w/v).**
- **Benefits**:
    - It is produced by an **energy-efficient, environment-friendly production process with less carbon footprints.**
    - **Increased availability to crop by more than 80%,**resulting in higher nutrient use efficiency.
    - It is expected to **improve crop productivity, soil health, and nutritional quality** of produce and address the "imbalanced and excessive use" of conventional fertiliser.

Indian Farmers Fertiliser Cooperative Limited (IFFCO)

- It **is India's largest multi-state cooperative society that is entirely owned by Indian cooperatives**.
- IFFCO is primarily **engaged in the production and distribution of fertilisers.**
- **Headquarters: New Delhi, India.**

BIS notifies 31 Indian standards related to Ayush herbs and products

Bureau of Indian Standards (BIS)

- BIS is the **National Standards Body of India established under the BIS Act 2016.**
- **Objective**: Harmonious development of the activities of **standardisation and quality assurance of goods and articles.**
- It works under the **Ministry of Consumer Affairs, Food & Public Distribution**.
- BIS **represents India in International Organization for Standardization (ISO)**and **International Electrotechnical Commission (IEC).**

ISO

- It is an **independent, non-governmental international organisation** with a membership of **167 national standard bodies**.
- Through its members, it **brings together experts to share knowledge and develop voluntary, consensus-based, market-relevant International Standards** that support innovation and provide solutions to global challenges.

IEC

- The IEC is a **global, not-for-profit membership organisation** whose work **underpins quality infrastructure and international trade in electrical and electronic goods.**
- The IEC **brings together more than 170 countries** and provides a global, neutral and independent standardisation platform to 20 000 experts globally.
- It **administers 4 Conformity assessment systems** whose members **certify that devices**, **systems, installations, services and people work as required**.

After a 70-year battle, the WHO declares Belize malaria-free

Belize

- It is located on the northeast **coast of Central America and south of the Yucatán Peninsula.**
- It has a land of mountains, swamps, and tropical jungle.

- It is bounded by Mexico to the north, Guatemala to the west and south, and **the Caribbean Sea to the east.**
- *Geographical features*
    - The southern half of the country is dominated by the rugged Maya Mountains, a plateau of igneous rock cut by erosion into hills and valleys that stretch in a southwesterly to northeasterly direction.
    - The northern half of the country **consists of limestone lowlands and swamps** less than 200 feet (60 metres) above sea level.
- Along the coast of this country, there is **Belize Barrier Reef** which is the second-largestbarrier reef in the world.
- The reef reserve system was designated a **UNESCO World Heritage site in 1996.**

High-Level Panel To Probe Alleged Scam In Gold Plating At Kedarnath Temple

Kedarnath Temple

- It is a **Hindu temple dedicated to Shiva**.
- **Location**: It is located at a height of **3,584 meters** on the **Garhwal Himalayan** range **near the Mandakini river**, in the Rudraprayag District of **Uttarakhand**.
- Kedarnath forms **one of the four sites of the Chota Char Dham** Pilgrimage circuit, and is **one of the 12 Jyotirlingas** of Lord Shiva in India.
- **Who build it?** It is said that the **Pandavas constructed** the Kedarnath Temple which was later **reconstructed by Adi Shankaracharya in the 8th century A.D.**
- **Architecture**:
    - It has exquisite architecture and is **built of extremely large but evenly shaped grey stone slabs.**
    - The stone **slabs are interlocked** with each other **with the use of iron clamps**.
    - **No mortar has been used** in the construction of the temple.
    - There is a **conical rock structure inside** the Kedarnath temple **that is worshipped as the Sadashiva form of Shiva.**
    - A "**Garba Griha**" for worship **and a Mandap for pilgrims** is placed inside the temple.

Chota Char Dham Yatra

- It refers to the **journey up the mountains to four sacred temples** in the North Indian state **of Uttarakhand.**
- The four temples that comprise Chota Char Dham are **Yamunotri Dham,**

Gangotri Dham, Badrinath Dham and Kedarnath Dham.

Jyotirlingas

- A Jyotirlinga is a shrine where **Lord Shiva is worshipped in the form of a Jyotirlingam**.
- There are **currently 12 main Jyotirlingas in India**.
- The 12 Jyotirlinga temples in India **take the name of the presiding deity**. Each **considered a different manifestation of Lord Shiva**.
- **12 Jyotirlingas** in India are:
    - Somnath Jyotirlinga in Gir, Gujarat
    - Mallikarjuna Jyotirlinga in Srisailam, Andhra Pradesh
    - Mahakaleshwar Jyotirlinga in Ujjain, Madhya Pradesh
    - Omkareshwar Jyotirlinga in Khandwa, Madhya Pradesh
    - Baidyanath Jyotirlinga in Deoghar, Jharkhand
    - Bhimashankar Jyotirlinga in Maharashtra
    - Ramanathaswamy Jyotirlinga in Rameshwaram, Tamil Nadu
    - Nageshwar Jyotirlinga in Dwarka, Gujarat
    - Kashi Vishwanath Jyotirlinga in Varanasi, Uttar Pradesh
    - Trimbakeshwar Jyotirlinga in Nasik, Maharashtra
    - Kedarnath Jyotirlinga in Rudraprayag, Uttarakhand
    - Ghrishneshwar Jyotirlinga in Aurangabad, Maharashtra

Delhi's First Skin Bank Opens At Safdarjung Hospital

- A skin bank is a place where **cadaveric skin is processed and preserved under optimal conditions** from where it can be used for the benefit of Burn victims.
- Skin can be donated after Death within **6 hours from the time of Death.**
- Anyone can Donate Skin **irrespective of sex & blood group; the** minimum age of the donor **should be 18 years.**
- There is no upper age limit; even a 100-year-old person can donate his skin, and it will be used for treatment.
- The skin of persons **suffering from AIDS, Hepatitis B & C, Sexually Transmitted Diseases**, Skin Cancer, Active skin Disease and Septicemia are considered **unfit for donation.**
- At the time of skin harvesting, a blood sample from the body of the deceased is also taken, and a necessary test for HIV, Viral markers & Hepatitis is carried out at the Skin Bank.
- An old history of trauma or old history of burns does not make the donor unfit

for skin donation.

- Skin is generally preserved in 85% glycerol solution. It is stored between 4-5 degree Celsius, and it can be stored for a period of up to 5 years.
- The country has **16 skin banks** — a facility where the skin of deceased persons can be donated — with seven in Maharashtra, four in Chennai, three in Karnataka, and one each in Madhya Pradesh and Odisha.

Egyptian President El-Sisi confers PM Narendra Modi with 'Order of the Nile' award

Order of the Nile Award

- It is **Egypt's highest state honour.**
- Instituted in 1915, the 'Order of the Nile' is **conferred upon Heads of state, Crown Princes, and Vice-Presidents** who offer Egypt or **humanity invaluable services.**
- The 'Order of the Nile' is a pure gold collar consisting of three-square gold units comprising Pharaonic symbols.
- The first unit resembles the idea of protecting the state against evils, the second one resembles prosperity and happiness brought by the Nile, and the third one refers to wealth and endurance.
- The three units are connected by a circular gold flower decorated with turquoise and ruby.
- Hanging from the collar is a hexagonal pendant decorated with flowers of the Pharaonic style and turquoise and ruby gems.
- In the middle of the pendant, there is a protruding **symbol** representing the Nile that **brings together the North** (represented by the Papyrus) and **the South** (represented by the Lotus).
- Those who receive the 'Order of the Nile' shall be saluted upon their death.

New rules aim to clamp down on corporate greenwashing

Greenwashing

- It is the process of **conveying a false impression** or misleading information **about how a company's products are environmentally sound.**
- Greenwashing **involves making an unsubstantiated claim to deceive consumers into believing that a company's products are environmentally friendly** or have a greater positive environmental impact than they actually do.
- In addition, greenwashing may occur when a **company attempts to emphasize sustainable aspects of a product to overshadow** its involvement in **environmentally damaging practices**.

- Companies can also greenwash initiatives with **vague claims that don't provide real data or scientific validation for the claims.**
- **For example**, a car vendor claims that a vehicle is eco-friendly because it is more fuel-efficient, while failing to mention or consider the larger industrial impact of vehicle manufacturing on the environment.

International Sustainability Standards Board (ISSB)

- It was created in 2021-22 to **develop a worldwide standard for sustainability reporting**.
- It is **part of the independent International Financial Reporting Standards** (IFRS) foundation, which also writes accounting rules used in more than 100 countries.
- **The mission** of the ISSB **is to develop**—in the public interest—**a comprehensive global baseline of high-quality sustainability disclosure standards** to meet investors' information needs.

Power ministry establishes UTPRERAK, a Centre of Excellence to Accelerate Adoption of Energy Efficient Technologies in Indian Industry

UTPRERAK

- The **Unnat Takniki Pradarshan Kendra (UTPRERAK)** is the Centre of Excellence to Accelerate **Adoption of Energy Efficient Technologies** and seeks to play a catalytic role in improving the energy efficiency of the Indian industry.
- It is also named as Advanced Industrial Technology Demonstration Centre (AITDC)
- It has been **set up by the Bureau of Energy Efficiency (BEE),** Ministry of Power.

Mandates

- The Centre is mandated to become the key reference and resource institution on **industrial energy-efficient technologies.**
- It will demonstrate and showcase energy-efficient technologies in key industry sectors.
- It will act as an exhibition cum information centre and **knowledge repository.**
- It will be a knowledge exchange platform where best practices from across various key sectors can be diffused among industry professionals through workshops and seminars.

Bureau of Energy efficiency

- It is a **statutory body** under the Union Ministry of Power.
- It was set up under the provisions of **the Energy Conservation Act of 2001.**

- **Mission:** Develop policy and strategies with a thrust on self-regulation and market principles within the overall framework of the Energy Conservation Act (EC Act), 2001.
- **Primary Objective:** To reduce energy intensity in the Indian economy.

Shri Parshottam Rupala to launch the 'Report Fish Disease' App developed by ICAR- National Bureau of Fish Genetic Resources (ICAR-NBFGR) under National Surveillance Programme for Aquatic Animal Diseases (NSPAAD)

Report Fish Disease App

- It will strengthen the **farmer-based disease reporting system** and for improving the reporting of aquatic animal diseases in the country.
- The app has been developed **by ICAR-NBFGR** under National Surveillance Programme for Aquatic Animal Diseases (NSPAAD).
- **Funded under: Pradhan Mantri Matsya Sampada Yojana** by the Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India.

Benefits

- It will help the farmers in **reporting the incidence of diseases** in finfish, shrimps, and molluscs on their farms with the field-level officers and fish health experts.
- This shall help farmers in **getting scientific advice** for the efficient management of the disease.
- The data regarding the diseases will be **stored on temporal & spatial scales** and can be used for mapping the disease cases.
- It would support farmers in improving farmer-based reporting, getting scientific advice, and reducing losses due to diseases, thereby increasing farmers' income.

Pradhan Mantri Matsya Sampada Yojana

- It is a flagship scheme for focused and sustainable development of the fisheries sector in the country with an estimated investment of Rs. 20,050 crores for its implementation during a **period of 5 years from FY 2020-21 to FY 2024-25** in all States/Union Territories.
- **Aims**
    - It aims at **enhancing fish production** by an additional 70 lakh tonnes by 2024-25.
    - **Increasing fisheries export** earnings to Rs.1,00,000 crore by 2024-25.
    - **Doubling of incomes** of fishers and fish farmers, reducing post-harvest losses from 20-25%.

- **Nodal Ministry:** Ministry of Fisheries, Animal Husbandry and Dairying

States invest in nuclear arsenals as geopolitical relations deteriorate—New SIPRI Yearbook out now

State of Armaments, Disarmament and International Security

- It is an **annual assessment of the** Sweden-based think tank **Stockholm International Peace Research Institute (SIPRI).**
- **Highlights**:
    - As on January 2023, the **world has 9,576 nuclear weapons** in military stockpiles **for potential use.**
    - That is **86 more than the number in January 2022.**
    - Of this stockpile, an estimated **3,844 warheads were 'deployed' with missiles and aircraft.**
    - **Around 2,000 of these 'deployed' weapons** — nearly **all of which belonged to Russia or the USA**—were **kept in a state of high operational alert**, meaning that they were fitted to missiles or held at airbases hosting nuclear bombers.
    - **Nine nuclear-armed states** — the United States, Russia, the United Kingdom, France, China, India, Pakistan, North Korea and Israel — **continue to modernise their nuclear arsenals** and have deployed several new nuclear-armed or nuclear-capable weapon systems in 2022.
    - The estimate of the size of **China's nuclear arsenal increased from 350 warheads in January 2022 to 410** in January 2023.
    - **India was estimated to have a growing stockpile of about 164 nuclear weapons, up from 160** the previous year. These weapons were assigned to a maturing nuclear triad of aircraft, land-based missiles and nuclear-powered ballistic missile submarines (SSBNs).
    - **Pakistan possessed approximately 170 nuclear warheads** as of January 2023 — **up from 165 from the previous year.**

Qing Dynasty imperial edict found in north China

Qing Dynasty

- The Qing Dynasty, or Ch'ing Dynasty, or **Manchu Dynasty,** was the **final imperial dynasty in China**, lasting from **1644 to 1912**.
- It was **preceded by the Han-led Ming Dynasty (1368–1644)** and followed by the Republic of China era (1912–1949).
- Under the Qing, the **empire's territory grew to treble its size** under the preceding Ming dynasty (1368–1644).

- The Qing Dynasty **annexed Mongolia, Northeast China, Xinjiang, Tibet, and Taiwan**, establishing a territory larger than that of today's China — the **largest China has ever been.**
- **History:**
    - In the **early 1600s, the Manchu people** of northern China began to **unite against the Ming Dynasty.**
    - **They formed** a somewhat **military society and mobilised a large army.**
    - **In 1644, the Manchus crossed the Great Wall and invaded China.**
    - They soon **took control of the Chinese capital city, Beijing**, and **declared the beginning of a** new dynasty called the **Qing**.
    - The **first Qing Emperor was** a five-year-old boy who became the **Shunzhi Emperor.**
    - The Manchus **continued to expand and conquer** more of China.
    - **In 1683, under the Kangxi Emperor, the Qing Empire included all of China**.
- **Features:**
    - **Model of Government:** The Manchu rulers **modelled** many of **their government practices on those of** the previous Chinese **Ming dynasty (1368–1644**). For example, they employed a civil service examination system, much like in previous Chinese dynasties, to recruit Chinese government officials.
    - **Cultural attitudes were strongly conservative**.
    - **Art**: The **arts flourished**: literati painting was popular, novels in the vernacular developed substantially, and Jingxi (Peking opera) developed.
    - **Trade**: Qing **porcelain, textiles, tea, paper, sugar**, and steel were **exported to all parts of the world.**
- **Military campaigns** in the latter part of the **18th century depleted government finances, and corruption grew**.
- These conditions, combined with **population pressures and natural disasters**, **led to the Opium Wars and the Taiping and Nian rebellions**, which in turn so **weakened the dynasty** that it was unable to rebuff the demands of foreign powers.
- The dynasty **ended with the republican revolution of 1911 and the abdication of the last emperor in 1912.**

US inclined to supply Ukraine with ATACMS missiles – report

Army Tactical Missile System (ATACMS)

- ATACMS is a **conventional surface-to-surface artillery weapon system** capable of striking targets well beyond the range of existing Army cannons, rockets and other missiles.
- It is **manufactured by the US defence company Lockheed Martin**.
- It is also **designated M39 by the US Army**, and its **Dept of Defence (DoD) designation** is **MGM-140.**
- This weapon's **known operators** other than the US **are Bahrain, Greece, South Korea, Taiwan, and the United Arab Emirates**.
- **Features**:
    - ATACMS are **24/7, all-weather, surface-to-surface, inertially guided missiles**.
    - It has a **range of about 190 miles (305 km).**
    - **Propulsion: Single-stage, solid propellant.**
    - It is typically **deployed from modified Multiple Launch Rocket System (MLRS)** launch vehicles.
    - **Targets include air defence artillery sites, surface-to-surface missile units**, logistics sites, command and control complexes, and helicopter forward operating bases