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POLITY

SC accepts unconditional apology of NCLAT member, slaps fine of Rs 1 cr

National Company Law Appellate Tribunal

- It was established under **Section 410 of the Companies Act, 2013** for hearing appeals against the orders of the National Company Law Tribunal(s) (NCLT), with effect from 1st June 2016.
- The NCLAT was established to provide an efficient and specialised forum for addressing matters related to company law, insolvency, and competition law.
- **Functions:**
 - Hear appeals against the orders passed by NCLT(s) under Section 61 of the **Insolvency and Bankruptcy Code, 2016 (IBC)**.
 - Hear and dispose of appeals against any direction issued, decision made, or order passed by the **Competition Commission of India (CCI)**.
 - It also hears and disposes of appeals against the orders of **the National Financial Reporting Authority**.
- **Composition:**
 - It is composed of a **chairperson** and **judicial and technical members**.
 - **Appointment:** These members are appointed by the Central Government based on their expertise and experience in relevant fields such as law, finance, accounting, management, and administration.
- **Headquarters:** New Delhi.

National Efficient Cooking Programme launched, to promote

National Efficient Cooking Programme

- It is a subset of the **Clean Cooking Scheme**.
- It focuses on **Non-Solar/Electricity-based Induction Cookstoves**, aligning with the Go- electric initiative by the Ministry of Power.
- This programme introduces induction-based cookstoves.
- **Target:** To deploy **20 Lakh Induction cook-stoves** across India.
- EESL seeks to reduce the environmental impact of cooking methods, ensuring cleaner air and improved health for citizens.
- EESL has also partnered with Modern Energy Cooking Services (MECS) for the large-scale deployment of induction cooktops.
- The deployment is expected to accelerate the acceptance and large-scale adoption of modern electric cooking devices in Indian kitchens.
- **Benefit:** It offers a cost advantage of **25-30% over traditional cooking methods**, promising both energy savings and cost-effective cooking solutions.

Energy Efficiency Services Limited

- It 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.
- It 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.
- It is also leading the market-related activities **of the National Mission for Enhanced Energy Efficiency (NMEEE)**.

Can a trans woman invoke the Domestic Violence Act? SC to consider

Protection of Women from Domestic Violence Act 2005 (DV Act)

- The **DV Act** was enacted by Parliament on September 13, 2005, and **extends to the whole of India**.
- It is basically meant to **provide protection to a wife or female live-in partner from violence at the hands of the husband, a male live-in-partner, or his relatives**.
- **Domestic violence** under the Act **includes actual abuse or the threat of abuse**, whether **physical, sexual, verbal, emotional, or economic**.
- **Harassment by way of dowry demands is also covered** under the definition of domestic violence.

Who is covered under the Act?

- The Act covers **all women** who may be **mother, sister, wife, widow, or partners living in a shared household**.
- The **relationship may be in the nature of marriage or adoption**.
- In addition, **relationships with family members living together** as a joint family are **also included**.

Who can file a complaint?

- **Any woman who alleges to have been subjected to any act of domestic violence** by the offender or any person may file a complaint on her behalf.
- A **child is also entitled to relief under the DV Act**. The **mother** of such a child **can make an application on behalf of her minor child** (whether male or female).
- **In cases where the mother makes an application** to the court **for herself**, the **children can also be added as co-applicants**.
- However, **no female relative of the husband** or the male partner **can file a**

complaint against the wife or the female partner.

Against whom can a complaint be filed?

- **Any adult male member who has been in a domestic relationship with the woman**
- **Relatives of the husband or the male partner** (including **both male and female relatives** of the male partner)
- **Remedies available:** Under the law, women can apply for reliefs such as
- **Protection Order**
- **Residence Order** for residing at Matrimonial House
- **Monetary Orders**, which include maintenance for herself and her children
- **Temporary custody of children**
- **Compensation order** for the damages caused to her
- It is **only when the relief granted by the courts is breached** that **criminal action is taken** against the respondent.
- **Protection Officers:**
- Under the DV Act, Protection Officers have been **appointed by the Government to help** the aggrieved **woman in filing the case.**
- They are to be **attached to the Magistrates of the courts** for the area notified for each protection officer.
- The Protection Officer **facilitates the women to approach the court by providing legal aid and get appropriate relief from the courts**
- Further, **they execute the orders of the Court** wherever necessary **with the help of the police.**
- **Options are also available to the aggrieved person to file the petition before the Judicial Magistrate Court, or with the service provider, or at a nearby police station.**

Service Providers:

- Under the DV Act, Service Providers are **members of notified Non Governmental Organizations.**
- They **co-ordinate with** all the **stakeholders to get justice and relief for the victims** of domestic violence.
- They **help the aggrieved women in filing the Domestic Incident Report, provide accommodation** in the short-stay homes along with their children, **counsel them, and help the aggrieved get medical treatment** if necessary.
- They also **impart them with vocational training** to help them secure employment and sustainable income.

Over 16 lakh Digital Life Certificates generated in 1st week of campaign 2.0

Digital Life Certificate (Jeevan Pramaan)

- The Digital Life Certificate for Pensioners Scheme of the Government, known

as Jeevan Pramaan, is a **biometric-enabled digital service for pensioners.**

- It was introduced in 2014 to **simplify and enhance** the convenience of **life certificate submissions for pensioners.**
- **Purpose:**
- One of the major requisites for **pensioners after their retirement** from the service is to **provide life certificates to** authorised **pension disbursing agencies** like the bank, **following which their pension is credited** to their account.
- **In order to get this life certificate, the individual** drawing the pension is **required to be either personally present** themselves **before the Pension Disbursing Agency or to have the Life Certificate issued by the authority where they have served earlier and have it delivered** to the disbursing agency.
- **The Jeevan Pramaan** scheme **seeks to** address this very problem by **digitising the whole process of securing the life certificate.**
- Pensioners have the **option to create Jeevan Pramaan, either online or via a mobile app.**
- Using Jeevan Pramaan, a pensioner **can now digitally provide proof of his/her existence to authorities for continuity of pension every year** instead of requiring to appear in person before the certifying authority or the disbursing agency.
- It **employs biometric authentication** to validate the pensioner's identity, effectively preventing fraudulent activity.
- **Beneficiaries:**
- **Pensioners of the Central Government, State Government, or any other Government organisation** can take benefit of this facility.
- It is **not available to remarried or reemployed Pensioners.** They are required to submit the life certificate the conventional way to their pension disbursing authority.

Supreme Court seeks Central government response to plea challenging Section 437A CrPC

Section 437A of the Code of Criminal Procedure (CrPC)

- Section 437A of the CrPC **requires a person who has been acquitted to furnish a bail bond and sureties to be able to be released** from custody.
- This is to **ensure the appearance of the accused if an appeal is filed** before a higher court **against the acquittal.**
- The provision states that **accused persons must execute bail bonds with sureties** to appear before the higher court **when an appeal or petition is filed against the judgement of the respective court.**
- **These bail bonds are valid for six months, and failure to appear leads to bond forfeiture and the application of Section 446**
- **Section 446 CrPC :**
- **It provides** that once the court records its satisfaction about the forfeiture of

the bond, it shall call upon the person bound by such bond to pay the penalty or to show cause why it should not be paid.

- **If sufficient cause is not shown** and the penalty is not paid, the **Court may proceed to recover the same** as if such penalty were a fine imposed by it under this Code.
- **Neither before the trial court nor before the appellate court, there is any applicability of Section-437A CrPC in cases where the accused is convicted.**
- As such, the **only time** when the **court is required to ask the accused to execute bonds is the time when the court acquits the accused.**

Acquittal under CrPC

- The term "acquittal" refers to a **judge's decision that legally confirms the innocence of the accused.**
- As a result, **it is granted when the court determines** that the **accused did not commit the crime** charged against him.
- It **means the prosecutor was unable to persuade the judge that the case was beyond a reasonable doubt.**
- If the **judge concludes that there is no evidence** that the accused committed the crime **after evaluating the prosecution's evidence**, the **judge acquits the accused person under Section 232.**
- **If the offender is not acquitted** under Section 232, however, **he is allowed to present his case and evidence.** The **court may acquit or convict the person under Section 233** after hearing both parties

Governor must act on Bills passed by State legislature

Power of the Governor Over State Bills

- **Article 200** of the Indian Constitution **includes the process for a state bill to be presented to the Governor** for assent.
- It **provides for four alternative** courses of action for a **Governor when a bill**, after being passed by the legislature, **is presented to him/her for assent.**
- **Give assent** to the bill
- **Withhold assent**
- **Return the bill to the state legislature**, requesting to **reconsider some provisions** of the bill **or the bill itself**
- **However, if the legislature again passes the bill** with/without accepting any of the amendments suggested by the **Governor, it is constitutionally bound to give assent** to the Bill.
- **Reserve the bill for the consideration of the President**
- This **reservation is mandatory when the bill** passed by the State Legislature **endangers the position of the State High Court.**
- **Article 201:**

- It states that **when a bill is reserved for the consideration of the President, the President can give assent to the bill or withhold assent.**
- The **President may also direct the Governor to return the bill** (if it is not a Money Bill) **to the House or Houses of the Legislature of the State for reconsideration.**
- However, the **Governor can reserve a bill and not grant assent in certain circumstances.** This includes if the bill is
 - **against the provisions of the Constitution**
 - **opposed to the Directive Principles of State Policy (DPSP)**
 - **against the larger interest of the country**
 - **of grave national importance**
 - **deals with the compulsory acquisition of property under Article 31A of the Constitution.**
- **Previous rulings of SC:**
- A Constitution Bench clarified that the **Constitution does not impose any time limit within which the Governor should provide assent to bills.**
- However, it maintained that the **Governor must honour the will of the Legislature and can act only in harmony with the Council of Ministers.**
- It also noted that causing **delay to assent bills will be an arbitrary exercise, which in itself is against the spirit of the constitution.**

Section 27 Evidence Act | Discovery Can't Be Proved Against Person If He Wasn't Accused Of Any Offence & Wasn't In Custody Of Police At The Time Of Confession: Supreme Court

Section 27 of the Indian Evidence Act

- Section 27 of the Evidence Act highlights an interesting and complex feature **related to the admission of confessions** within its legal framework.
- **Sections 25 and 26 establish protection against self-incrimination** and abuse of power by the police authority, deeming confessions made in police custody without the presence of a magistrate as inadmissible before a court of law.
- **Section 27 adds an exception by enabling the admission of confessions that result in the discovery of facts.**
- ****Section 27 states: "Provided that, when any fact is deposed to as discovered in consequence of information received from a person accused of any offence, in the custody of a police officer, so much of such information, whether it amounts to a confession or not, as relates distinctly to the fact thereby discovered, may be proved."**
- In simpler terms, **any confession made by a person while in police custody that leads to the revelation of a fact is considered admissible in court.**
- **The basic idea embedded in Section 27 of the Evidence Act is the doctrine of confirmation by subsequent events.** This doctrine is founded on the **principle that every part of the statement made at the instance of the**

accused, in a police custody **should necessarily be confirmed by the subsequent events of discovery, to make it admissible in court.**

- In the case of Asar Mohd. v. State of U.P, the Supreme **Court held that** the concept of "**fact**" mentioned in Section 27 **is not limited to physical objects alone but also includes essential psychological or mental facts that may be directly relevant to the case.**

Legal Literacy and Legal Awareness Program (LLAP) of the Department of Justice reaches more than 6 lakh people through 14 implementing agencies under the DISHA scheme.

Legal Literacy and legal Awareness Program

- Since 2012, Department of Justice (DoJ), Ministry of Law and Justice, Government of India has been implementing Access to Justice Scheme in North Eastern States including Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura and in UT of Jammu & Kashmir.
- **Major focus: Legal Empowerment of community**, dissemination of simplified Information, Education and Communication (IEC) materials in local languages and dialects and capacity development of Panchayati Raj Functionaries and Village Chiefs on formal justice delivery system.
- **Aim:** To empower the poor and disadvantaged sections of society to seek and demand justice services.
- The Programme also seeks to **improve the institutional capacities** of key justice service providers to enable them to effectively serve the poor and disadvantaged.
- **Duration:** DoJ has formulated a scheme on Access to Justice named 'Designing Innovating Solutions and Holistic Access to Justice (DISHA)' to be implemented during **the period of 2021 to 2026.**
- **Objectives**
- **Use of Technology for enhanced delivery** of legal literacy, its Knowledge Products and implementation of Innovative and Holistic ideas.
- **Mainstreaming legal literacy** through building and forging partnerships across Ministries and allied Departments, Institutions, Schools etc.
- **Capacity Building and Utilization** of Existing Grassroot/frontline Workers/ Volunteers.
- **Developing of Indicators to measure Legal Literacy** and Legal Awareness in India. Concurrent Evaluation and Assessment of Legal Literacy and Legal Awareness Programmes.

CBI independent body, not under our control: Centre to Supreme Court

Central Bureau of Investigation (CBI)

- It is the **premier investigative agency** in India, with a **dual responsibility** to **investigate grievous cases** and **provide leadership** and direction in **fighting corruption to the police force across the country**.
- The **establishment** of the CBI was **recommended by the Santhanam Committee on Prevention of Corruption** (1962–1964).
- It is **not a statutory body**, as it **was set up by a resolution** (1963) of the Ministry of Home Affairs.
- It **derives its powers from the Delhi Special Police Establishment Act, 1946**.
- It is also the **nodal police agency** in India that **coordinates investigations on behalf of Interpol member countries**.
- **Motto: Industry, Impartiality, and Integrity**
- **Nodal Ministry: Ministry of Personnel, Public Grievances, and Pensions**
- Though, **for issues under the Prevention of Corruption Act**, its **superintendence lies with the Central Vigilance Commission**.
- Following are the **types of cases that CBI deals with**:
- **Anti-Corruption Crimes:** CBI manages the investigation of cases under the Prevention of Corruption Act **against public officials and central government employees, Public Sector Undertakings (PSUs), Corporations, or bodies owned or controlled by the central government** of India.
- **Economic Crimes:** It probes the **cases of huge financial scams and serious economic frauds**, comprising crimes relating to fake Indian currency notes, bank fraud and cybercrime, import-export and **foreign exchange violations**, cultural property, mega **smuggling racket of narcotics, antiques**, and smuggling of other contraband items.
- **Suo Moto Cases:**
- CBI accelerates the investigation of offences **only in the Union Territories** by taking them up on a priority basis.
- The **central government can ask the CBI to probe a crime in a state**, but **only with due permission from the respective State**
- The **Supreme Court and High Court can also direct the CBI to investigate crimes anywhere in the country without the state's approval**.
- **Special Crimes:**
- CBI manages the **investigation of serious and pre-planned crimes under the Indian Penal Code (IPC) and other laws on the requests of the state governments or the direction of the Supreme Court and High Courts**.
- For instance, cases like bomb blasts, terrorism, abduction for ransom, and crimes committed by the mafia or the underworld at a particular place in the country.

What does the proposed legislation to overhaul criminal justice system mean?

- A significant change is the introduction of new offences that were absent in the IPC like acts endangering sovereignty, organised crime, terrorism offences, mob lynching, sexual intercourse by deceitful means/ false promise to marry.

- But the manner in which the offences are drafted continue to perpetuate the problem of vague criminal law provisions that exacerbate the risk of arbitrary arrests.
- It should be noted that certain problematic IPC provisions do not find place in the Bharatiya Nyaya Sanhita (BNS) Bill, 2023. There are no provisions similar to s. 377 (unnatural offences) and s. 309 (attempt to suicide).
- Sedition as an offence is not present, but the introduction of “acts endangering sovereignty” as an offence is perhaps the most draconian provision in these Bills. Not only is the provision vague, the manner in which it criminalises certain actions is bound to give the police unchecked powers of arrest.
- In the Bharatiya Nagarik Suraksha Sanhita, 2023 (that seeks to replace the Criminal Procedure Code), the period during which an arrested person can be sent to police custody has been expanded.
- Like in the CrPC, an arrested person can be sent to police custody for a maximum of 15 days after the date of arrest, but in the proposed law these 15 days of police custody can be spread over a 60- or 90-day period depending on the offence.
- However, the Nagarik Suraksha Bill has significant improvements for the rights of victims — perhaps the most important of those is the provision allowing registration of [FIR](#) in any police station irrespective of where the offence was committed.
- The provision requiring mandatory video recording of search and seizure seeks to address fairness in police investigations. The Nagarik Suraksha Bill also seeks to plug an important gap by making it the responsibility of a prison superintendent to ensure that an application is made to the court to release undertrials who have completed half or one-third of their maximum possible sentence.

Need for modernization of India's criminal justice system (CJS) in India:

Modernizing Jurisprudence

There is a need to reform the current criminal justice system to bring it in line with contemporary legal standards. Notably, Example: The introduction of community service as a punishment in the new bill reflects a shift towards a more reformative approach.

Aligning with Supreme Court Rulings

There is a need to reform CJS to align with the Supreme Court decisions, including the decriminalization of adultery and same-sex relations

Addressing Overlaps

There is a need to eliminate inconsistencies and duplications with specific laws, e.g., the removal of IPC provisions on weights and measures to avoid overlap with the

Legal Metrology Act, 2009.

Updating Definitions

There is a need to replace the old definition in acts, to align it with new modern reality e.g., the new bill updates terminology, replacing 'unsound mind' with 'mental illness' in line with modern medical understanding (Mental Healthcare Act, 2017)

Ensuring Fairness and Efficiency

The overarching goal is to establish a criminal justice system that is fair, just, and efficient, addressing the evolving needs of modern society.

Digital Advertisement Policy, 2023

Highlights:

- **Digital Penetration and Media Shift:** With increasing **internet users and telecom subscribers**, the **policy responds to the shift in media consumption towards digital platforms.**
- **Government Outreach:** The policy enables the **Central Bureau of Communication (CBC)** to employ **digital advertising for government initiatives**, using digital media's wide reach to **efficiently convey citizen-centric messages.**
- **Expansion Across Various Platforms:** **CBC will leverage digital audio platforms, Over-the-Top (OTT) services, video on demand, mobile apps, and social media for government advertising.**
- **Transparency and Efficiency:** The policy introduces **competitive bidding for rate discovery**, ensuring **fair pricing and efficiency.**
- **Enhanced Digital Outreach:** Aligning with the **current social media presence** of various government departments, **this policy amplifies the outreach of government schemes and initiatives** through CBC's extensive advertisement dissemination.
- **Adaptability and Stakeholder Engagement:** The policy acknowledges the dynamic nature of the digital landscape and incorporates provisions to embrace new technologies and platforms

Central Bureau of Communication

The **Central Bureau of Communication (CBC)** is a unit of the **Ministry of Information and Broadcasting**. The CBC provides **communication solutions to Ministries, Departments, Public Sector Undertakings (PSUs), and autonomous bodies**. The CBC was set up on December 8, 2017 by **integrating the following departments:**

- Directorate of Advertising and Visual Publicity (DAVP)
- Directorate of Field Publicity (DFP)

- Song & Drama Division (S&DD)

'AANA Dashboard for Cities' portal launched

AANA Dashboard for Cities

- It would serve as a **tool for comparing similarly placed Urban Local Bodies (ULBs)** and promoting peer learning amongst ULBs.
- This dashboard will inspire the ULBs by pointing to possibilities and areas of improvement and providing them the opportunity to learn and engage with frontrunners.
- It aims **to create a robust database** of the key performance metrics of **Urban Local Bodies**, which could be accessed by all stakeholders, and subsequently would open for public view once it gets populated.
- Urban Local Bodies (ULBs) across the country can participate in this pioneering initiative to voluntarily submit their key data on a regular basis, through a simple, easy-to-fill, data entry form on the portal.
- **Objectives** of the AANA Dashboard are to help cities to
 - See how **they are faring vis-à-vis other cities.**
 - Inspire them by pointing to **possibilities and areas of improvement** and
 - Providing opportunity to **learn and engage with frontrunners.**
- The Dashboard will present the data submitted by the ULBs on **the basis of indicators across five broad pillars namely,**
 - Political & Administrative Structure,
 - Finance
 - Planning,
 - Citizen Centric Governance and
 - Delivery of Basic Services.
- The ULBs will submit their data, including audited accounts, and self-reported performance metrics by logging in to the dashboard's portal.
- ULBs would be free to update the information initially provided by them, anytime on the portal as per need.
- The Dashboard has been envisaged as a permanent platform for ULB related data, that would be updated on a regular basis.
- The Ministry **through Digital India Corporation** will provide handholding support to ULBs / States in the data submission process on a need basis.
- **Nodal Ministry:** Ministry of Housing and Urban Affairs

Indian Railways' One Station One Product scheme to boost local artisans, craftsmen; functional at over 1K stations

One Station One Product scheme

- It is an initiative by the Indian Railways, under the **Ministry of Railways.**
- It was launched with a vision to **promote 'Vocal for Local'.**

- It provides uniquely designed sale outlets for locals to **sell indigenous products nationwide**.
- This scheme is designed by the **National Institute of Design, Ahmedabad**.
- It aims to build each railway station as a promotional hub and showcasing local and indigenous manufacturing products.
- Under the scheme, the allotment is done to all eligible applicants on a rotational basis.
- The pilot of the scheme was started on March 25, 2022.
- This scheme is providing welfare of local artisans, potters, weavers, tribals etc.
- The eligible applicant will be allotted a temporary stall or kiosk for a period of 15 days on deposition of Rs 1,000 with Railways.
- Sale outlets are provided at stations nationwide, allotted through a tendering process.
- The zonal railways will identify the stations, eligible products and the vendors.

PM launches Viksit Bharat Sankalp Yatra, PM Janjati Adivasi Nyaya Maha Abhiyan, PM JanMan from Jharkhand

Particularly Vulnerable Tribal Groups (PVTGs)

- PVTGs are a **more vulnerable group among tribal groups** in India.
- These groups **have primitive traits, geographical isolation, low literacy, zero to negative population growth rate and backwardness**.
- Moreover, they are largely **dependent on hunting for food** and a **pre-agriculture level of technology**.
- **In 1973, the Dhebar Commission set up a separate category for Primitive Tribal Groups (PTGs)**. In 1975, the **Centre identified 52 tribal groups as PTGs**. **In 1993, 23 more groups were added** to the list. Later, **in 2006, these groups were named PVTGs**.
- **Currently, there are 2.8 million PVTGs belonging to 75 tribes** across 22,544 villages in 220 districts **across 18 states and Union Territories** in India.
- According to the 2011 Census, **Odisha has the largest population of PVTGs at 866,000**. It is **followed by Madhya Pradesh** at 609,000 and Andhra Pradesh (including Telangana) at 539,000.
- The **largest PVTG is Odisha's Saura community**, numbering 535,000.

PM-PVTG Development Mission

- The **Rs 24,000-crore project** is **aimed at the development of the PVTGs**.
- It has been **designed to bring critical infrastructure** like power, water, road connectivity, housing, education, and healthcare **to the PVTG communities living in remote villages**.
- Under the scheme, about **11 interventions like the PM-Gram Sadak**

Yojana, PM-Gram Awaas Yojana, Jal Jeevan Mission, and others **will be taken to these target villages through the coordinated work of nine ministries.**

- In addition, **saturation will be ensured for schemes such as the Pradhan Mantri Jan Arogya Yojna, Sickle Cell Disease Elimination, TB Elimination**, 100 percent immunisation, PM Surakshit Matritva Yojana, PM Matru Vandana Yojana, PM Poshan, and **PM Jan Dhan Yojana.**

Ayushman Bharat Health and Wellness Centres (AB-HWCs) to be called 'Ayushman Arogya Mandir'

Ayushman Arogya Mandir

- The Government of India announced in 2018 that 1.5 lakh HWCs would be created in the country by transforming existing sub-health centres and primary health centres to deliver comprehensive primary health care and declared this as one of the two components of Ayushman Bharat.
- It was decided the **Centre would provide 60% of the funding** and, in turn, states would follow its design manual.
- To date, 61 lakh AB-HWCs have been made functional across the country, which is higher than the initial target.
- The AB-HWCs **provide maternal and child healthcare services, including** primary-level care for emergencies and trauma, including free drugs and diagnostic services, among other things.
- The new tagline of AB-HWCs is **Arogyam Parmam Dhanam'.**

Ayushman Bharat (AB)

- The Union government announced in 2018 two major initiatives in the health sector, as part of the Ayushman Bharat programme.
 - **Curative care - Pradhan Mantri Jan Arogya Yojana (PMJAY):** For hospitalisation at secondary- and tertiary-level private hospitals
 - **Primary care - Health and Wellness Centres (HWC):** To strengthen primary healthcare
- PMJAY will provide a cover of up to **5 lakhs per family** per year to poor and vulnerable people, for secondary and tertiary care hospitalization.
- The **National Health Authority (NHA)** is responsible for the **implementation of PMJAY.**

3 more years for fast-track courts trying rape and Pocsso cases

Fast Track Special Court (FTSC)

- It was formulated as a **centrally sponsored scheme** to establish FTSCs for the timely disposal of cases related to **rape and the Protection of Children**

from Sexual Offences Act (POCSO Act) in August 2019.

- Initially commenced in October 2019 for one year, the scheme was extended for an additional two years until March 31, 2023.
- Now it has been further extended until March 31, 2026, with a financial outlay of Rs. 1952.23 crore.
- **Fund:** The Central Share is funded **from the Nirbhaya Fund**.
- These are designed as dedicated courts which are expected to ensure swift dispensation of justice, offering quick relief to victims while strengthening the deterrence framework for sexual offenders.
- **Nodal Ministry:** It is implemented by the Department of Justice, **Ministry of Law & Justice**.
- It augments State Government resources for establishing FTSCs across the country, ensuring the swift disposal of cases related to rape and the POCSO Act.
- All States/Union Territories have participated in the Scheme, operationalizing 761 FTSCs, including 414 exclusive POCSO Courts.
- The expected outcomes of the scheme are:
 - Reflect the nation's commitment to ending sexual and gender-based violence.
 - Substantially reduce pending cases of Rape & POCSO Act, relieving the burden on the judicial system.
 - Ensure swift access to justice for victims of sexual crimes through improved facilities and expedited trials.
 - Reduce the burden of cases to a manageable number.

Cabinet approves Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan

Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN)

- The **PM-JANMAN** (comprising Central Sector and Centrally Sponsored Schemes) to focus on **11 critical interventions through nine ministries**, including the Ministry of Tribal Affairs.
- The **scheme aims** to provide crucial interventions such as permanent housing, road connectivity, piped water supply, mobile medical units, hostel construction, 'Anganwadi' facilities, skill development centres,
- Other than the 11 critical interventions, the following interventions of other Ministries will be part of Mission:
 - **Ministry of Ayush** will set up **Ayush Wellness Centre** as per existing norms, and Ayush facilities will be extended to PVTG habitations through Mobile Medical Units.
 - **The Ministry of Skill Development and Entrepreneurship** will **facilitate skill and vocational training** in PVTG habitations, multipurpose centres and hostels as per the suitable skills of these communities.

Principles On Admissibility Of Secondary Evidence

Primary Evidence

- It is covered by **Section 62 of the Evidence Act** and is considered the **highest class of evidence**.
- Primary evidence, also known as best evidence, **refers to the actual documents produced for the court's inspection**.
- It is **admissible without prior notice** and **takes precedence over secondary evidence**.
- As per Section 62, when the document itself is produced for the inspection of the court, it is called the primary evidence. If the document is in parts, then each part forms the primary evidence.
- **Example:** Birth Certificate issued by a government authority.

Secondary Evidence under the Indian Evidence Act, 1872:

- It is defined under **Section 63 of the Evidence Act**.
- It **can only be introduced if primary evidence is not available, and the reason** for its absence **must be explained**.
- It is considered a **substitute for the original or primary evidence**.
- It is generally considered to be of **lower evidentiary value compared to primary evidence**.
- However, **if primary evidence is unavailable and the reason** for its absence **is explained, secondary evidence may be admitted** in court.
- **Different types** of secondary evidence are **Certified copies, Copies prepared by mechanical process, Counter foils, Photographs, Xerox copy, Photostat copy, Carbon copy, typed copy, Tape records, Counterparts, Oral accounts, Registration copy, etc.**
- **Example:** Copy of the 10th mark sheet with Date of Birth or identification proofs like Voter Card or Aadhar Card as secondary evidence for a lost birth certificate.
- **Principles laid down by the Supreme Court** for examining the admissibility of secondary evidence:
 - The law requires the **best evidence to be given first**, that is, primary evidence.
 - **Section 63** of the Evidence Act **provides a list of the kinds of documents** that can be **produced as secondary evidence**, which is admissible only in the absence of primary evidence.
 - **If the original document is available, it has to be produced** and proved in the manner prescribed for primary evidence. **So long as the best evidence is within the possession** or can be produced, or can be reached, **no inferior proof could be given**.
 - A party must endeavour to adduce primary evidence of the contents, and **only in exceptional cases will secondary evidence be admissible**. The **exceptions** are designed to **provide relief when a party is genuinely unable to produce the original** through no fault of

- that party.
- When the non-availability of a document is sufficiently and properly explained, then secondary evidence can be allowed.
 - Secondary evidence could be given when the party cannot produce the original document for any reason not arising from his default or neglect.
 - When the copies are produced in the absence of the original document, they become good secondary evidence. Still, there **must be foundational evidence that the alleged copy is a true copy of the original.**
 - Before producing secondary evidence of the contents of a document, the non-production of the original must be accounted for in a manner that can bring it within one or other of the cases provided for in the section.
 - **Mere production and marking of a document** as an exhibit by the Court cannot **be held to be due proof of its contents. It has to be proved in accordance with the law.**

EC orders Telangana govt to stop all disbursements under Rythu Bandhu Scheme

Rythu Bandhu Scheme:

- The Rythu Bandhu scheme, also known as the **Farmer's Investment Support Scheme (FISS)**, is a welfare programme for farmers started **by the Telangana government** in 2018.
- The **objective** of this scheme is twofold:
 - to provide a timely **cash grant for the initial investment needs of farmers**
 - to **ensure** that **farmers do not fall into the debt trap.**
- Under the scheme, financial assistance of **Rs 5,000 per acre per farmer each season** is **directly transferred** to each farmer's account.
- This financial support was **distributed biannually**, allocated for **both the kharif and rabi harvests.**
- The assistance can be **used for the purchase of inputs** like seeds, fertilizers, pesticides, labour, **and other investments in the field operations** of Farmer's choice for the crop season.
- **Eligibility:**
 - The scheme is open to **all resident farmers** in the state **who own land.**
 - **Farmers cultivating** the land **in the forest**, a majority of them from Scheduled Tribe communities **and having a Record of Forest Rights (ROFR) document**, are **also eligible** to receive benefits under the scheme.
- It is the **country's first direct farmer investment support scheme** where cash is paid directly to the beneficiary.

ECONOMY

RBI to oversee all cross-border payment services

Payment Aggregator-Cross Border (PA-CB)

- PAs-CB **facilitates cross-border online payments for the import and export of permissible goods and services.**
- The RBI has set a **minimum net worth requirement of Rs 15 crore** for these entities, which will be categorised as PA-CB.
- They will be **accountable for ensuring** that they **do not facilitate payment transactions for the import of any restricted or prohibited goods and services.**
- **If the amount involved exceeds Rs 2.5 lakh, the PA-CB must carry out due diligence** on the buyer as well.

Payment Aggregator (PA)

- A PA (also known as a **merchant aggregator**) is a **third-party service provider** that **allows merchants to accept payments from customers by integrating it into their websites** or apps.
- It **facilitates different types of payment transactions, including cash and cheques, online payments** through multiple payment sources, or offline touchpoints.
- It **allows merchants to accept bank transfers without setting up a bank-based merchant account.** It means a merchant need not have a merchant account directly with the bank.
- A PA in India is **incorporated under the Companies Act 2013.**
- A PA **can be a bank or a non-bank entity.**
- Since a PA handles funds, **it requires a license from the RBI.**
- **Only non-bank payment aggregators require unique authorization from the RBI,** as 'handling funds' is considered a part of the normal banking relationships for bank PAs.
- **Examples: Amazon (Pay) India, Google India, Razorpay, Pine Labs, etc.**

Payment Gateway

- It is a **software service** that **connects your bank account to the platform where you need to transfer your money.**
- It **authorises you to conduct an online transaction through different payment modes** like net banking, credit card, debit card, UPI, or other online wallets.
- A Payment gateway **plays the role of a third party that securely transfers your money** from the bank account to the merchant's payment portal.

Payment Aggregator vs. Payment Gateway:

- A **payment gateway is software that allows online transactions to take place, while a payment aggregator is the inclusion of all these payment gateways.**
- While a **payment gateway is an intermediary, the payment aggregator is the interface** where the payment gateway processes the transactions.
- Most payment aggregators own payment gateways to offer various exclusive services to their merchant customers.

After RoDTEP, govt likely to extend export-boosting textile scheme

Rebate of State and Central Levies and Taxes (RoSCTL) Scheme

- It aims to **reimburse all embedded State and Central taxes/levies for exports of manufactured goods and garments.**
- The RoSCTL scheme was **notified by the Ministry of Textiles** in 2019. However, the scheme shall be **implemented by the Department of Revenue, Ministry of Finance.**
- This scheme has been introduced as a **replacement for the previous Rebate of State Levies (RoSL) Scheme, which provided only rebates of state taxes.**
- RoSCTL **intends to compensate the State and Central Taxes and Levies** in addition to the Duty Drawback Scheme **on the export of apparel/ garments, and made-ups** manufactured in India **by way of a rebate.**
- **Importer-Exporter Codes (IECs)** are **necessary** in order to **apply for the RoSCTL programme.**
- **The rebate under the RoSCTL Scheme shall be given to the exporter in the form of duty credit scrips, which will be maintained in the electronic duty credit ledger.** The scrips shall be **issued electronically on the Customs automated system.**
- The duty credit **scrips shall be used for payment of customs duties leviable under** the First Schedule to the **Customs Tariff Act, 1975.** It **cannot be utilized towards the payment of any other taxes, like IGST, Compensation Cess etc., upon the import of goods.**
- The duty credit available in an **e-scrip shall be transferred** at a time **for the entire amount** in the said e-scrip **to another person, and the transfer of the duty credit in part shall not be permitted.**
- The **value of the goods for calculation of duty credit** to be allowed under the Scheme **shall be the declared export Free on Board (FOB) value** of the said goods **or up to 1.5 times the market price** of the said goods, **whichever is less.**
- **All exporters** of garments/Apparel and made-ups manufactured in India **are eligible to take benefit** under this scheme, **except entities/ IECs under the Denied Entity List of the Directorate General of Foreign Trade (DGFT).**

Free on Board (FOB) value

- Free on board, also called **Freight on Board**, is a term used to indicate **who is liable for goods damaged or destroyed during shipping**.
- **FOB origin means the buyer is at risk and takes ownership of goods once the seller ships the product.**
- **FOB destination means the seller retains the risk of loss until the goods reach the buyer.**

New IT regime for regulated entities from April 1: RBI

New guidelines on Information Technology (IT) Governance for Regulated Entities (REs)

- The REs have been **mandated to put in place a robust IT governance framework** to cover focus areas like strategic alignment, risk and resource management performance, and Business Continuity/Disaster Recovery Management.
- This **framework should specify the governance structure** and processes **necessary to meet the RE's business/strategic**
- The framework will **specify the roles** (including authority) and **responsibilities of the Board of Directors, board-level Committee, and Senior Management.**
- It will also address the issue of **adequate oversight mechanisms** to ensure accountability and **mitigation of IT and cyber/information security risks.**
- The **enterprise-wide risk management policy** or operational risk management policy **will incorporate periodic assessments of IT-related risks** (both inherent and potential risks).
- The **board of RE would approve** the strategies and **policies related to IT, Information Assets, Business Continuity, Information Security, and Cyber Security** (including Incident Response and Recovery Management/Cyber Crisis Management). **They should review such strategies and policies at least annually.**

IT strategy committee (ITSC)

- The **RE will establish a Board-level IT Strategy Committee (ITSC)**, which will **comprise a minimum of three directors.**
- **Its chairman would be an independent director** and carry substantial expertise in managing/guiding information technology initiatives.
- The ITSC **should meet at least on a quarterly basis.**
- The committee will **ensure that the RE has put an effective IT strategic planning process** in place and will **guide in preparation of IT strategy and ensure that the IT strategy aligns with the overall strategy of the RE towards accomplishment of its business objectives.**
- The guidelines mandate **REs to establish an IT steering committee** with **representation at senior management level from IT and business**

functions.

- This committee will **assist the ITSC in strategic IT planning, oversight of IT performance and aligning IT activities with business needs**, and will oversee the processes put in place for business continuity and **disaster recovery**.
- It will also **ensure implementation of a robust IT architecture meeting statutory** and regulatory
- **Every IT application, which can access or affect critical or sensitive information, shall have necessary audit and system logging capability and should provide audit trails.**
- The **audit trails shall satisfy a RE's business requirements** apart from regulatory and legal requirements.
- The **audit trails must be detailed enough to** facilitate the conduct of audit, **serve as forensic evidence** when required and assist in dispute resolution, **including for non-repudiation purposes.**

India: National Coal Index rises 3.83 points in September amid higher demand

National Coal Index

- The NCI is a price index which **reflects the change in the price level of coal on a particular month** relative to the fixed base year.
- This price index combines the prices of coal from all the sales channels- Notified Prices, Auction Prices and Import Prices.
- It has been rolled out on 4th June 2020 and the aim is to have an index that will truly reflect the market price.
- The base year is **FY 2017-18**.
- The concept and design of the Index as well as the Representative Prices have been **developed by the Indian Statistical Institute, Kolkata**.
- The Index is meant to encompass all transactions of raw coal in the Indian market.
- This includes **coking and non-coking of various grades** transacted in the regulated (power and fertilizer) and non-regulated sectors.
- The NCI's upward movement indicates rising demand of coal because of upcoming festive season and winter in the country, which will encourage coal producer to take maximum benefit by further scaling-up domestic coal production to meet the growing energy demands.

Govt begins process of constituting Sixteenth Finance Commission

Finance Commission

- It is a **constitutional body for giving recommendations on the distribution of tax revenues between the Union and the States and amongst the States**
- The Finance Commission is constituted **by the President under Article 280**

of the Constitution.

- It is **constituted at the end of every fifth year or earlier**, as deemed necessary by the President.
- **Parliament may, by law, determine the requisite qualifications** for appointment as members of the Commission and the procedure for their selection. **On account of this, The Finance Commission (Miscellaneous Provisions) Act, 1951, was passed.**
- **Mandate:** It is the duty of the Commission to **make recommendations to the President as to:**
 - the **distribution between the Union and the States of the net proceeds of taxes** which are to be, or may be, divided between them **and the allocation between the States of the respective shares** of such proceeds;
 - the **principles which should govern the grants-in-aid** of the revenues of the States **out of the Consolidated Fund of India;**
 - the **measures needed to augment the Consolidated Fund of a State to supplement the resources of the Panchayats and Municipalities** in the State **on the basis of the recommendations made by the Finance Commission of the State;**
- any other matter referred to the Commission by the President in the interests of sound finance.
- **Composition:** It consists of a **Chairman and four other members** appointed by the President.
- **Qualifications of members:** The **Chairman** of the Commission is selected from among persons **who have had experience in public affairs**, and the **four other members** are selected from among persons **who**
 - are, or have been, or are **qualified to be appointed as judges of a High Court;** or
 - **have special knowledge of the finances** and accounts of Government; or
 - have had **wide experience in financial matters** and in administration; or
 - have **special knowledge of economics**
- ****Tenure of members:**** Every member will be in office for the **time period as specified in the order of the President** and is **eligible for reappointment.**
- **The recommendations of the Finance Commission are not binding on the government.**

SC upholds key provisions of IBC, says no manifest arbitrariness

Insolvency and Bankruptcy Code, 2016

- It is the **bankruptcy law of India** which seeks to consolidate the existing framework by creating a **single law for insolvency and bankruptcy.**
- It **provides for a time-bound process to resolve insolvency.**
- **Applicability:** The provisions of the Code are applicable to **companies, limited liability entities, firms, and individuals** (i.e. all entities other than financial service providers).
- **Timeframe for completion of the exercise:**

- **Companies have to complete the entire insolvency exercise within 180 days** under the IBC. The deadline **may be extended if the creditors do not raise objections** to the extension.
- **For smaller companies**, including startups with an annual turnover of Rs 1 crore, **the whole exercise of insolvency must be completed in 90 days**, and the deadline **can be extended by 45 days**.
- **If debt resolution doesn't happen, the company goes for liquidation.**
- **Who regulates the IBC proceedings?**
- **The Insolvency and Bankruptcy Board of India (IBBI)** has been appointed as a regulator and it can oversee these proceedings.
- IBBI has **10 members appointed by the Central Government.**
- IBBI **regulates insolvency professionals, insolvency professional agencies, and information utilities** set up under the Code.
- **Who facilitates the insolvency resolution? A licensed professional administer the resolution process, manage the assets of the debtor, and provide information for creditors** to assist them in decision-making.
- **Who adjudicates over the proceedings?**
- The proceedings of the resolution process will be adjudicated **by the National Companies Law Tribunal (NCLT) for companies** and the **Debt Recovery Tribunal for individuals.**
- The **courts approve initiating the resolution process, appointing the insolvency professional, and giving nod to the final decision** of creditors.
- **What is the procedure to resolve insolvency under the Code?**
- When a default occurs, the **resolution process may be initiated by the debtor or creditor.**
- The **insolvency professional administers the process.**
- The **professional provides financial information** of the debtor **from the information utilities to the creditor** and manages the debtor's assets.
- This process **lasts for 180 days, and any legal action against the debtor is prohibited during this period.**
- **What does the committee of creditors do?**
- A **committee consisting of the financial creditors** who lent money to the debtor **is formed by the insolvency professional.**
- The creditors' committee **decides the future of the outstanding debt** owed to them.
- They **may choose to revive the debt** owed to them **by changing the repayment schedule or selling the assets** of the debtor **to get their dues back.**
- **If a decision is not taken in 180 days, the debtor's assets go into liquidation.**
- **What happens under liquidation?**
- If the debtor goes into liquidation, an **insolvency professional administers the liquidation process.**
- **Proceeds** from the sale of the debtor's assets **are distributed in the following order: First, insolvency resolution costs, including the remuneration to the insolvency professional; second, secured creditors, whose loans are backed by collateral; and third, dues to workers, other employees; forth,**

unsecured creditors.

NHAI Accepts First Insurance Surety Bond as Bid Security for NHAI TOT Bid for Monetization

- It is **the first time this innovative instrument** (Insurance Surety Bond) is **being utilized** as a Bank Guarantee (BG) in the road infrastructure sector for monetization of bids.
- NHAI has been working closely with Highway Operators Association of India (HOAI), SBI General Insurance and AON India Insurance to implement this initiative.

Insurance Surety Bond

- These bonds can be defined in their simplest form as **a written agreement to guarantee compliance**, payment, or performance of an act.
- These are instruments where **insurance companies act as 'Surety'** and provide the financial guarantee that the contractor will fulfil its obligation as per the agreed terms.
- Surety is a unique type of insurance because it **involves a three-party agreement**.
- The three parties in a surety agreement are:
 - **Principal:** The party that **purchases the bond** and undertakes an obligation to perform an act as promised.
 - **Surety:** The **insurance company or surety company that guarantees** the obligation will be performed. If the principal fails to perform the act as promised, the surety is contractually liable for losses sustained.
 - **Obligee:** The party **who requires and often receives the benefit of the surety** For most surety bonds, the obligee is a local, state or federal government organisation.
- **Significance**
 - It will act as a security arrangement for infrastructure projects and will insulate the contractor as well as the principal.
 - The product gives the principal a contract of guarantee that contractual terms and other business deals will be concluded in accordance with the mutually agreed terms.
 - In case the **contractor doesn't fulfil the contractual terms**, the Principal can raise a claim on the surety bond and recover the losses they have incurred.
 - Unlike a bank guarantee, the Surety Bond **Insurance does not require large collateral from the contractor**, thus freeing up significant funds for the contractor, which they can utilise for the growth of the business.
 - The product will also help in reducing the contractors' debts to a large extent, thus addressing their financial worries.

NHAI's Use of Insurance Surety Bond in Monetisation Bid

- This move aims to **boost liquidity, encourage private participation in highway development, and promote the 'Ease of Doing Business'**.
- The **Insurance Surety Bonds**, facilitated by **NHAI in partnership with insurance companies**, serve as a **financial guarantee, underlining their significance in evolving the road infrastructure landscape**.
- This approach has **received substantial traction**, with over 40 such bonds issued for various NHAI contracts, **signalling the potential for wider adoption**.
- The **Ministry of Finance, Government of India** has recognized **e-BGs and Insurance Surety Bonds** at par with Bank Guarantees, **consolidating their role in government procurements**

Surety Bonds

A surety bond is a **legally binding contract** that is a **unique type of insurance**. It is a **three-party agreement** that guarantees **compliance, payment, or performance of an act**.

A surety bond is a **promise to be liable for the debt, default, or failure of another**. The principal is the **debtor, and the surety is the third person who becomes responsible for the payment of the obligation if the principal is unable to pay or perform**. The principal remains **primarily liable, whereas the surety is secondarily liable**.

Surety bonds are **used as an assurance that the issuer will pay any debts if the other party fails to do so**. For example, surety bonds can be used as a **substitute for bank guarantees in government procurement**

India, Asian Development Bank sign \$400 million loan pact to build high-quality urban infrastructure

Asian Development Bank (ADB)

- It is a multilateral development bank established on 19th **December 1966**.
- **Mission:** To foster economic growth and cooperation among countries in the Asia-Pacific Region.
- **Functions:**
- It assists members and partners by providing loans, technical assistance, grants, and equity investments to promote social and economic development.
- It also provides **financing to certain private sector projects** as well as public-private partnerships.
- It regularly facilitates policy dialogues and provides advisory services.
- ****Members:**** It encompasses **68 members**—of which 49 are from within Asia and the Pacific and 19 outside.

- It is run by a board of governors, which represents the member countries of the ADB.
- It is modelled closely on the World Bank and **has a similar weighted voting** system where votes are distributed in proportion to members' capital subscriptions.
- As of 2022, ADB's five **largest shareholders are Japan and the United States** (each with 15.6% of total shares), the People's Republic of China (6.4%), India (6.3%), and Australia (5.8%).
- **Source of Funding:** It relies on member contributions, retained earnings from lending, and the repayment of loans for the funding of the organization.
- **Headquarters:** Manila, Philippines.

Active Equity Funds Add Rs 74,000 Crore In Q2 FY 2023, Debt Funds Lose Rs 51,000 Crore

Equity Funds

- An equity fund is a mutual fund that **invests principally in stocks**.
- It can be actively or passively (index fund) managed. Equity funds are also known as stock funds.
- Stock mutual funds are principally categorised according to company size, the investment style of the holdings in the portfolio, and geography.

Active equity funds

- In this fund, the **fund manager** is 'Active' in deciding whether to buy, hold, or sell the underlying securities and in-stock selection.
- This **fund relies on professional fund managers** who manage investments.
- Active funds adopt different strategies and styles to create and manage the portfolio.
- They are expected to generate better returns (alpha) than the benchmark index.
- The risk and return in the fund will depend upon the strategy adopted.

Passive equity funds

- These funds hold a portfolio that **replicates a stated index or benchmark**.
- In a passive fund, the fund manager has a passive role in the stock selection.
- Buy, hold, or sell decisions are **driven by the benchmark index** and the fund manager/dealer merely needs to replicate the same with minimal tracking error.

MSCI adds 9 Indian stocks, no exits

MSCI Index

- It is owned by the **multinational investment management** and financial services company Morgan Stanley.
- It is an investment research firm that **provides stock indexes, portfolio risk and performance analytics**, and governance tools to institutional investors and hedge funds.
- It is a leading provider of critical decision support tools, including stock indexes, and services for the global investment community.
- MSCI indices facilitate the construction and monitoring of portfolios in a cohesive and complete manner, avoiding benchmark misfits. It has over 160,000 indices in its portfolio.
- MSCI has indexes for **countries, regions, emerging markets, developed markets**, small-cap, all cap and even Islamic indexes.
- It selects stocks for its equity indexes that are easily traded and have high liquidity, with companies having high free float getting more weightage.
- It prefers stocks that have active investor participation and are without owner restrictions.

MSCI India Index

- It is designed to measure the performance of the **large and mid-cap segments** of the Indian market.
- With 113 constituents, the index covers approximately 85% of the Indian equity universe.
- The index is **reviewed quarterly**.

Need for World Bank's governance indicators to be transparent

Worldwide Governance Indicators

- It is released by the **World Bank**.
- It provides a ranking of 215 countries and territories.
- It is based on **six dimensions** of governance:
 - Voice and Accountability
 - Political Stability and Absence of Violence
 - Government Effectiveness
 - Regulatory Quality
 - Rule of Law
 - Control of Corruption
- These indicators are designed to help researchers and analysts assess broad patterns in perceptions of governance across countries and over time.
- The World Bank compiles the Worldwide Governance Indicators using data from more than 30 think tanks, international organisations, non-governmental organisations, and private firms deemed credible.
- The WGI was developed in 1999 by two World Bank researchers, Daniel Kaufmann and Aart Kraay.

- The data are **updated annually in September**.

World Bank

- It is an **international financial institution** that provides loans and grants to the governments of low and middle-income/developing countries to pursue capital projects.
- It was established along with the IMF at **the 1944 Bretton Woods Conference**.
- **The WB Group Includes**
 - **International Bank for Reconstruction and Development (IBRD)**: It provides loans, credits, and grants.
 - **International Development Association (IDA)**: It provides low or no-interest loans to low-income countries.
 - **International Finance Corporation (IFC)**: It provides investment, advice, and asset management to private companies and governments.
 - ****Multilateral Guarantee Agency (MIGA)****: It ensures lenders and investors against political risks such as war.
 - **International Centre for the Settlement of Investment Disputes (ICSID)**: It settles investment disputes between investors and countries.
- **India is not a member of ICSID.**

ENVIRONMENT

Wild dogs resurface in Odisha's Debrigarh Sanctuary

Debrigarh Wildlife Sanctuary

- 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, Sambhar etc.
- **Flora:** It has a dry deciduous forest that attracts a host of birds during the winters.

Dhole or wild dogs

- It is a wild canid found in the forests of central, south, and southeast Asia.
- **Distribution:**
 - They can be seen as far north as Siberia, as far south as some Malaysian islands, and as far west as the Indian peninsula.
 - They are found in **three clusters across India**, namely the **Western and Eastern Ghats, the central Indian landscape and North East India**.
 - The Western and Eastern Ghats are stronghold regions for dholes.
- **Habitat:** They inhabit dense jungles, steppes, mountains, scrub forests, and pine forests.
- **Conservation status:**
 - **IUCN:** Endangered
 - **CITES:** Appendix II
 - **The Wildlife Protection Act 1972:** Schedule II

Black Stork Spotted For 1st Time In Hastinapur

Black Stork

- The black stork (*Ciconia nigra*) is a large bird in the stork family Ciconiidae
- **Habitat:** It breeds in **swampy, coniferous, and mixed forests**.
- It can also be found in **grasslands, agricultural fields, and on the margins of lakes and rivers** during winter.
- It is a **long-distance migrant**, with European populations wintering in tropical Sub-Saharan Africa, and Asian populations in the Indian

subcontinent.

- **Distribution:** It is mainly found in Europe, Asia, and African countries.
- **Conservation status**
 - **IUCN:** Least concern

Hastinapur Wildlife Sanctuary

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

Researchers discover new freshwater fish species in Odisha's Mahanadi river

Awaous Motla

- It **is a fish** with a vibrant yellow-coloured body and a fleshy upper lip.
- It was collected from the **Mahanadi River**.
- The discovery was made during the ongoing research project funded by the Department of Science and Technology of the Odisha government.
- The species belongs to the **family 'Awaous' (Oxudercidae)** and is thus named 'Awaous motla.

Mahanadi River

- It is one **of the major east-flowing** peninsular rivers in India.
- **Origin:** The river originates from **the Sihawa range of hills** in the Dhamtari district of Chhattisgarh state.
- **Course:**
 - It flows in a southeastern direction through **Chhattisgarh and Odisha**.
 - The catchment area of the basin extends over major parts of Chhattisgarh and Odisha and comparatively smaller portions of **Jharkhand, Maharashtra, and Madhya Pradesh**.
- It is bounded in the north by Central India hills, in the south and east by the Eastern Ghats, and in the **west by Maikal hill range**.
- **Tributaries:** The main tributaries of Mahanadi are Seonath River, Jonk River, Hasdeo River, Mand River, Ib River, Ong River, and Telen River.

Acid cauldron on Earth: World's largest acidic lake looks spooky from space

Kawah Ijen

- Kawah Ijen is a **volcanic crater lake** located in **East Java, Indonesia**.
- It is **part of the larger Ijen volcano complex**, which includes several other craters.
- The **main attraction** of Kawah Ijen is its stunning **turquoise-colored crater lake**.
- The **vibrant colour** of the water is due to the **high concentration of dissolved sulfuric acid** and other minerals.
- The lake is the **largest, highly acidic crater lake in the world**.
- The lake has been **included in UNESCO's World Biosphere Reserves**.
- The **Ijen volcano complex is still active**, and Kawah Ijen is one of the areas where volcanic activity is observed.
- The **volcano releases sulphur gases**, which **can be ignited** and **produce impressive blue flames, especially at night**. These flames are often referred to as "**blue fire**."
- The area around Kawah Ijen is **known for traditional sulphur mining**.

Copernicus Sentinel-2 Mission

- It is a **European wide-swath, high-resolution, multi-spectral imaging mission**.
- It comprises a **constellation of two polar-orbiting satellites** placed in the **same sun-synchronous orbit**, phased at 180° to each other.
- It **aims at monitoring variability in land surface conditions**, and its wide swath width (290 km) and high revisit time (10 days at the equator with one satellite and 5 days with 2 satellites under cloud-free conditions, which results in 2-3 days at mid-latitudes) will support monitoring of Earth's surface changes.

UP govt proposes chopper services to DTR, experts raise concern

Dudhwa Tiger Reserve

- It is located **on the Indo-Nepal border** in the district of Lakhimpur-Kheri in **Uttar Pradesh**.
- It **includes Dudhwa National Park** and two nearby **sanctuaries**, **Kishanpur and Katarniaghat**.
- It was established in 1988 and covers an area of 1,284 square kilometres.
- It is a typical **Tarai-Bhabar habitat of the upper Gangetic Plains** Biogeographic province.
- **Rivers:** The **Sharda River** flows by the Kishanpur WL Sanctuary, the **Geruwa River** flows through the Katarniaghat WL Sanctuary, and the **Suheli and Mohana streams** flow in the Dudhwa National Park, **all of which are**

tributaries of the mighty Ghagra River.

- **Flora:** The vegetation is of the **North Indian Moist Deciduous type**, containing some of the **finest examples of Sal forests** (**Shorea robusta**) in India, as well as the most extensive **tracts of moist grasslands** that remain in this region.
- **Fauna:** It is home to a large number of rare and endangered species, which include the **Tiger, Leopard cat, Sloth bear, rhinos** (One horn), Hispid hare, Elephants, Black deer, Swamp deer, etc.

Residents concerned about thick layer of foam on Pavana River

Pavana River

- It is situated in the west of **Maharashtra state**, in the **Pune District**.
- The river is a notable **river that crosses Pune City** and divides Pune City and the Pimpri-Chinchwad area.
- **Origin:** It originates from the **Western Ghats**, about 6 km south of Lonavala.
- It is a **tributary of the Bhima River** and **merges with the Mula River in Pune city**.
- **Course:** **Flowing eastward initially**, it **becomes southbound and passes through the suburbs** of Dehu, Chinchwad, Pimpri, and Dapodi **before its confluence with the Mula River**.
- **A dam is built** on this river at **Pavana Nagar**, called the "**Pavana Nagar Dam**".
- **Pavana Nagar Dam:**
 - It is an **earthfill gravity dam**.
 - It is **1,329 m (4,360 ft) long** and **42.37 m (139.0 ft) high**, with a gross storage capacity of 30,500.00 km³.
 - It was built to provide sufficient water to the nearby localities. It is the **main source of water in the region**.

Survey identifies over 50 grass species at Gundla Brahmeswaram Wildlife Sanctuary

Gundla Brahmeswaram Wildlife Sanctuary

- **Location:** It is located in the **Kurnool district of Andhra Pradesh**.
- It is located **between two important hill passes** known as "**Mantralamma Kanuma**" and "**Nandi Kanuma**."
- It spreads **over the Nallamalla hill range**.
- The sanctuary derives its **name from the Gundla Brahmeswaram plateau**.
- It was declared a wildlife sanctuary on September 18, 1990, and covers an area of around 1,194 kilometres square.
- The **northern part** of this Sanctuary **forms a major part of the southern boundary of the Nagarjunasagar-Srisailem Tiger Reserve**.

- **River:** The **Gundlakamma River** stretches across the sanctuary.
- **Vegetation:** **Dry mixed deciduous forest, moist dry deciduous, semi-evergreen, dry deciduous scrub forest, and dry savannahs.**
- **Climate:** The climate is **hot throughout the year**, with most of the **precipitation occurring during the monsoon months.**
- **Flora:** It consists of trees like **Teak, Dalbergia, Boswellia, Shisham, Andug, Prerocarpuss, Terminalia, Albizzia, Anogeissius, and Bamboo.**
- **Fauna:** The varied wildlife found here includes **langur, jungle cat, panther, tiger, mouse deer, hyena, and bonnet monkey.**

Scientists discover two new coral reefs, unexplored seamounts in Galapagos Islands

Galapagos Islands

- Location: It is situated **in the Pacific Ocean, roughly 600 miles off the coast of Ecuador.**
- The Archipelago is a **group of 19 islands, 13 large and 6 small, and dozens of islets and rocks that cover an area of over 17,000 square miles.**
- It is **distributed on either side of the Equator** with an underwater wildlife spectacle with abundant life.
- **Repeated volcanic eruptions helped to form the rugged mountain landscape of the Galápagos Islands.**
- In comparison with most oceanic archipelagos, the **Galapagos are very young, with the largest and youngest islands, Isabela and Fernandina, with less than one million years of existence, and the oldest islands, Española and San Cristóbal, somewhere between three to five million years.**
- **Mount Azul, at 5,541 feet, is the highest point of the Galapagos Islands.**
- **Climate:** It is characterized by **low rainfall, low humidity, and relatively low air and water temperatures.**
- It was designated as a **UNESCO World Heritage site** in 1978.
- **Biodiversity:**
 - The Galápagos are best known for their diverse array of plant and animal species. **Many species are endemic, as they are not found anywhere else in the world.**
 - These include the **giant Galápagos tortoise** (*Chelonoidis nigra*), the **marine iguana** (*Amblyrhynchus cristatus*), the **flightless cormorant** (*Phalacrocorax harrisi*), and the **Galápagos penguin.**
 - The **Galápagos penguin** (*Spheniscus mendiculus*) is the **only penguin species to live in the Northern Hemisphere.**

Seamounts

- A seamount is an **underwater mountain with steep sides rising from the seafloor.**

- Most seamounts are **remnants of extinct volcanoes**.
- **Typically**, they are **cone-shaped but often have other prominent features such as craters** and linear **ridges** and some, called **guyots**, have large, **flat summits**.
- There is a broad size distribution for seamounts, but **to be classified as a seamount**, the feature **must have a vertical relief of at least 1,000 meters (3,300 feet) above the surrounding seafloor**.
- They are **found in every ocean** basin in the world.
- They **function as "oases of life,"** with **higher species diversity and biomass** found on the seamount and in the waters around it than on the flat seafloor.
- Seamounts **also provide substrate (a location for attachment)** where organisms can settle and grow.

Adaptation Gap Report 2023 - UN Environment Programme

Adaptation Gap Report

- It has been published annually by the United Nations Environment Programme (UNEP) since
- The aim of the reports is to inform national and international efforts to advance adaptation.
- It provides an update on the **global status and progress of the adaptation process** across three elements: planning, financing, and implementation.
- It complements the Emissions Gap Report series and explores the implications of failing to close the emissions gap.
- It is co-produced by the **UNEP Copenhagen Climate Centre (UNEP-CCC)** and the **World Adaptation Science Programme (WASP)**.

Key findings of the report

- It is estimated that **adaptation costs will increase significantly** by 2050 for most sectors, especially under high-warming scenarios.
- The adaptation finance **needs are 10-18 times as high as** the current international public adaptation fund flows.
- The world countries must urgently cut greenhouse gas emissions and increase adaptation efforts to protect vulnerable populations.
- In 2021, funding from developed countries to developing countries for adaptation projects was 15% lower than in previous years.
- It identifies seven ways to bridge the adaptation gap, which include an increase in **international finance flows** and **greater domestic mobilisation of resources**.
- Also, it calls for a **reform of the global financial architecture** to ensure greater and easier access to finance for climate-related purposes from multilateral agencies such as the World Bank or the IMF.

Survey in Mudumalai Tiger Reserve: 50 Odonata species identified

Odonata Species

- Odonata is an **insect order** consisting of **three groups: Anisoptera**(which includes **dragonflies**), **Zygoptera** (which includes **damsel**flies), and **Anisozygoptera** (a **relict group** represented by only two living species).
- It is one of the **ancient orders of insects**.
- Odonata is a diverse group, with over **6,000 known species**.
- **Distribution:**
- They are **globally distributed, from the tropics, where they are most numerous** and varied, **to the boreal forests** of Siberia and North America.
- They are also **found throughout the Southern Hemisphere**, with the **exception of Antarctica**.
- **India is highly diverse, with more than 500 known species**.
- **Habitat:** They are found in a variety of habitats, such as **freshwater environments like ponds, rivers, and lakes**, and are **typically associated with bodies of water during their larval stage**.
- **Features:**
- **Many characteristics distinguish Odonata from other groups** of insects: **minute antennae**, extremely **large eyes (filling most of the head)**, **two pairs of transparent membranous wings with many small veins**, a **long slender abdomen**, and an **aquatic larval stage (nymph)**.
- The **abdomen is almost always longer than any of the wings**.
- More than **80% of their brain is devoted to analysing visual information**.
- Large, **active by day**, and often **strikingly coloured**, they are **usually seen flying near water**.
- Their **mouths have been adapted for biting**, making them efficient hunters.
- Adult odonates are **voracious predators, as are the aquatic larvae**.

Mudumalai Tiger Reserve

- **Location:**
- It is located in the **Nilgiris District of Tamil Nadu**, spread over 321 sq. km. at the **tri-junction of three states, viz, Karnataka, Kerala, and Tamil Nadu**.
- It lies on the ****Northeastern and Northwestern slopes of the Nilgiri Hills,****which are part of the **Western Ghats**.
- It is **part of the Nilgiris Biosphere Reserve**, the first Biosphere Reserve in India.
- It has a **common boundary with Wayanad Wildlife Sanctuary**(Kerala) on the West, **Bandipur Tiger Reserve** (Karnataka) on the North, the **Nilgiris North Division** on the South and East, and **Gudalur Forest Division** on the South West.
- The name Mudumalai means " the ancient hill range". Indeed, it is as **old as**

65 million years when the Western Ghats were formed.

- **Terrain:** The terrain is **undulating**, with the **elevation ranging from 960m to 1266m.**
- **Habitat:** A variety of habitats ranging from **tropical evergreen forest, moist deciduous forest, moist teak forest,** dry teak forest, secondary grasslands, and **swamps** are found here.
- **Flora:**
- It has **tall grasses**, commonly **referred to as "Elephant Grass", bamboo** of the giant variety, and valuable **timber species like Teak, Rosewood,** etc.
- It has **wild relatives of cultivated plants: wild rice, ginger,** turmeric, cinnamon, etc.
- **Fauna:** Includes **Tiger, Elephant, Indian Gaur, Panther, Sambar,** Spotted Deer, Barking Deer, Mouse Deer, Common Langur, Malabar Giant Squirrel, Mongoose, and Hyena, among others.
- The recent **Oscar-winning 'Elephant Whisperers'** was **filmed** at the Theppakadu Elephant Camp, located **inside the Mudumalai Tiger Reserve.**

Western Ghats throws up a new species of jumping spiders

Pancorius Sebastiani

- The new species belongs to the jumping spider **genus Pancorius Simon,** 1902, and the **Salticidae**
- It has been **named Pancorius Sebastiani** after the late spider taxonomist P.A. Sebastian.
- The **Pancorius** genus of Asian jumping spiders is primarily **distributed in southeast Asia.**
- Its distribution was hitherto limited to the eastern and northeastern regions of
- The new species is the **first to be reported from the south.**
- **Features**
- The males and females of **Pancorius Sebastiani** exhibit a reddish brown carapace, yellowish abdomen with black patches, and chevron-shaped markings posteromedially.
- An analysis of **Salticidae** species in the country shows that only two states, **West Bengal and Tamil Nadu,** have reported high numbers, while the others, including those harbouring biodiversity hotspots like the Western Ghats and northeastern India, have relatively few numbers of species.

Shendurney Wildlife Sanctuary

- It is a protected area **located in the Western Ghats** of India, in the Kollam district of
- This sanctuary derives its **name from Chenkurinji** (*Gluta travancorica*), a species endemic to this region.
- It comes under the control of **Agasthyamalai Biosphere Reserve.**

- Flora: Tropical evergreen and semi-evergreen forests cover a major area of the sanctuary.
- Fauna: Includes tigers, gaurs, elephants, sambar deers, sloth bears, Malabar Raven, Malabar banded swallowtail, Red-disc Bushbrown, etc

New species of epiphytic plant discovered in Arunachal Pradesh

New epiphytic plant

- It is named *Lysionotus*
- **Range:** The native range of the genus *Lysionotus* is the **Himalayas to Japan and Indo-China**, and about 50% of the species found are endemic.
- Species of the genus are mostly **epiphytic, lithophytic, or terrestrial evergreen erect** or climbing shrubs.
- The new species bears thick leaves and attractive purple flowers.
- The conservation status of this new species is provisionally assessed as 'Critically Endangered', in accordance with the International Union for Conservation of Nature (IUCN) Red List.
- It is epiphytic in nature and grows another plant.
- Epiphytic plants are mostly found in **tropical and subtropical**

Botanical Survey of India

- It is the apex taxonomic research organisation of the country, which is under the **Ministry of Environment, Forest & Climate Change, Government of India**.
- It was established on 13 February 1890 under the direction of Sir George King.
- The mandate of the organisation has been broadened to include biosystematics research, floristic studies, documentation, databasing of National Botanical collection, digitization of herbarium specimens,
- **Headquarters:** Kolkata

Klyuchevskoy volcano erupts on Russia's Kamchatka Peninsula

Klyuchevskoy volcano

- It is one of the most famous volcanoes in
- It is one of the **highest active volcanoes** in the world, with a height of 4,750 metres.
- The volcano consists of a truncated cone with a central crater.
- It is a stratovolcano.
- It has erupted more than 50 times since 1700.

Kamchatka Peninsula

- It lies in **far eastern Russia**, between **the Sea of Okhotsk** on the west and **the Pacific Ocean and Bering Sea** on the east.
- It is one of the world's most concentrated areas of **geothermal activity**, with about 30 active volcanoes.
- It is one of the **largest peninsulas** in the world.
- **Climate:** Severe, with prolonged, cold, and snowy winters and wet, cool summers.
- It is part of a vast belt of Earth **known as the "Ring of Fire"** which circles the Pacific Ocean and is prone to eruptions and frequent earthquakes.

TN govt implements 'Project Dolphin' to strengthen marine ecology

Project Dolphin

- It is to **strengthen the marine ecology** and overall health of the marine environment.
- This project includes **strengthening patrolling and surveillance**, improving habitat through the restoration of coastal ecosystems, removing ghost nets, and encouraging the involvement of locals with incentives.
- It will be implemented at a cost of 8.13 crore rupees **during 2023-2024**.
- **Funding:** While **60%** of the amount will be given by the **Union government**, the State will bear the remaining cost.
- This will be helpful in **improving the population of dolphin species** and protecting their habitat, while at the same time improving the livelihood of the local communities.
- More than nine species of marine dolphins are found in the coastal waters of Tamil Nadu.
- The major habitats of the dolphins are found in the **Gulf of Mannar Biosphere Reserve**.

Integrated Development of Wildlife Habitat Programme

- It is an ongoing **Centrally Sponsored Scheme** that has been made operational by adding more components and activities to the erstwhile Centrally Sponsored Scheme - "Assistance for the Development of National Parks and Sanctuaries," **during the 11th Plan Period**.
- **Components of the scheme**
- **Support to Protected Areas** (National Parks, Wildlife Sanctuaries, Conservation Reserves, and Community Reserves)
- Protection of **Wildlife Outside Protected Areas**
- Recovery programmes for saving **critically endangered species** and habitats

Gulf of Mannar Biosphere Reserve

- It is endowed with three distinct Coastal ecosystems, namely **coral reefs, seagrass bed and mangroves**.

- It is considered one of the world's richest regions from a marine biodiversity perspective.
- It is the first Marine Biosphere Reserve in South and Southeast Asia.
- It has been recognized by the **Man and Biosphere (MAB) Programme of UNESCO**.
- It is also home to several globally important and highly threatened species like the **Dugong**, whale shark, **sea horses**, **Balanoglossus**, green sea turtle, Hawksbill turtle, dolphins, sacred chanks etc

Tiger count rises to one from nil in J'khand's Palamau Tiger Reserve

Palamu Tiger Reserve

- **Location: Chhota Nagpur plateau** region of
- The reserve forms a part of the **Betla National Park**.
- It is one of the first 9 tiger reserves created in the country at the inception of 'Project Tiger'.
- It is the **first reserve in the world** in which a tiger census was carried out as a pugmark count, as early as 1932 under the **supervision of J.W. Nicholson**.
- Three rivers namely **North Koyal, Auranga and Burha** flow through the valleys.
- The Reserve is very rich in minerals like Bauxite and Coal.
- **Vegetation:**
- It is primarily dominated by **Northern Tropical Dry Deciduous**, Sal Forest and its associates.
- Smaller patches of **Northern tropical Moist Deciduous forests** exist too in the Reserve.
- ****Flora:**** Shorea robusta, Acacia catechu, Madhuca indica, Terminalia tomentosa, Butea monosperma, Pterocarpus marsupium, Anogeisus latifolia, Indigofera pulchella etc.
- ****Fauna:**** Some keystone and principal species found in the reserve include Tiger, Asiatic Elephant and Leopard, Grey wolf, Wild dog, Gaur, Sloth bear and four horned antelope etc

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New species of wasp discovered in Kerala

Taeniogonalos dhritiae

- It is a **new species of wasp discovered** in the Ranipuram Hills area in the **Western Ghats of Kerala.**
- It is named after Dr. Dhriti Banerjee, a noted entomologist.
- It is a species in the **family Trigonalalyidae.**
- While there are about 122 described species of Trigonalalyidae in 16 genes worldwide, the **knowledge of Indian Trigonalalyidae is scanty, with only eight described species** till date.
- These insects **are hyperparasitoids** (parasites of parasites) where **females lay eggs on other parasitic wasps.**
- The Trigonalalyidae **family is found in abundance in parts of Europe, Northern Africa, and Asia.**

Zoological Survey of India (ZSI)

- ZSI is a **premier research organization** functioning **under the Union Ministry of Environment, Forest and Climate Change.**
- ZSI has been actively **involved since its inception in 1916 in the survey, exploration, and research** leading to the expansion of our knowledge **on the immensely rich faunal diversity of our country.**
- ZSI **headquarters is located in Kolkata** and has 16 regional centers spread across the country.

Climate change is bad for health but climate services save lives

Climate Services report 2023

- Less than 25 per cent of health ministries across the world utilise climate information and services to monitor health risks related to climate sensitivity.
- It highlights health protection as a priority in almost all countries and identifies the need for high-quality information for better decision making.
- While extreme heat causes the greatest mortality of all extreme weather, **heat warning services are provided to health decision makers in only half of the affected countries;**
- Climate change mitigation leading to reducing air pollution can save lives;
- Investments to improve the **capabilities of the health sector** to safeguard the most **vulnerable are insufficient.**

World Meteorological Organization

- It is originated from **the International Meteorological Organization (IMO)**, which was founded in 1873.
- It was established in 1950.
- It is the **specialized agency of the United Nations** for meteorology (weather and climate), operational hydrology and related geophysical sciences.
- Currently it has a membership of **187 countries.**
- **Governance Structure:**
- Its supreme body is the **World Meteorological Congress**, which consists of representatives of all members.
- It meets **at least every four years** to set general policy and adopt regulations.
- A 36-member Executive Council meets annually and implements policy.
- **Headquarters:** Geneva, Switzerland.

Kerala University researchers discover new crustacean family off Indian coast

New crustacean parasites

- Researchers have named the new family
- This is also the **first discovery and description of a new crustacean family from India.**
- This parasitic copepod was found to depend upon the **Dollfus' Stargazer (Uranoscopus guttatus)**, a **fish dwelling** in depths ranging from 300-550 m off the southwest Indian coast.
- The discovery of the new family has also led to the creation of a new genus and species, **Hirodai ohstukai** under it.
- These parasitic copepods are known to **infest a wide range of hosts, from sponges to marine mammals.**
- New **isopod species** which has been named **Glyptothoa sagara**; 'Glypto' as the fish parasite was found in the deep sea fish Glyptothidium macropus, and 'sagara' for ocean.
- Another new isopod crustacean parasite species named **Elthusa aquabio** was collected from an unknown fish.
- The fourth new species is a 11-12 mm "flesh-penetrating parasitic copepod,"

which has been named as **Cardiodectes vampire**.

- It was found to infest the deep-sea fish **Chlorophthalmus corniger**.

Crustaceans

- These are members of the **subphylum Crustacea** (phylum Arthropoda),
- They are found in a wide range of habitats - most are free-living **freshwater or marine** animals, but some are terrestrial.
- They are invertebrates **with a hard exoskeleton** (carapace), a **segmented body** that is bilaterally symmetrical, more than four pairs of jointed appendages ("legs") and **an open circulatory system**.
- **Examples:** Crabs, lobsters, shrimps, and wood lice etc.

Rare bioluminescent mushroom spotted in Kanyakumari Wildlife Sanctuary

Mycena chlorophos

- It is a **bioluminescent fungus** primarily found in subtropical Asia.
- It is characterized by a pristine white disc with a shallow depression in the center and emits a bright, greenish light in the dark
- *Mycena* species have bell-shaped caps and thin stems.
- There are around 103 species of bioluminescent fungi in the world, of which seven are found in India.

Bioluminescence

- It is the ability of living organisms to emit light.
- It **occurs due to a biochemical reaction** between luciferins, oxygen and the enzyme luciferase.
- The benefit of bioluminescence in fungi is to attract insects for **facilitating their spore dispersal**.

Kanyakumari Wildlife Sanctuary

- It is located in the Kanyakumari district of Tamil Nadu.
- It is situated near the southernmost tip of India at the confluence point of three major water bodies namely; Arabian Sea, Bay of Bengal, and the Indian Ocean.
- **Seven rivers** have their **origin in this forest** including the famous **Pahrli and Thamirabarani rivers**.
- **Vegetation:** This region represents southern thorn forests, dry deciduous, moist deciduous, semi evergreen forests and ever green hill sholas with grassy downs.
- **Fauna:** It is home to Indian Bison, Elephant, Nilgiri Tahr, Sambar Deer, Lion-tailed Macaque and also reptiles such as Indian Rock Python.

Japan gets a brand new island after underwater volcano eruption

Phreatomagmatic eruption

- A new island near Japan's Ogasawara island chain was formed by **phreatomagmatic eruption**.
- It is an eruption that **involves both magma and water**. It typically interacts explosively leading to concurrent ejection of steam and pyroclastic fragments.
- Phreatomagmatic ash is formed by the same mechanism over a wide range of basic and acidic compositions. A blocky and uniform crust with low vesicle content is formed.
- Deposits from phreatomagmatic eruptions are thought to be better classified and finer-grained than those from magmatic eruptions. This is the result of higher fragmentation of phreatomagmatic eruptions.

Ogasawara Islands

- The Ogasawara Islands are located in the **North-Western Pacific Ocean**.
- It is also known as **Bonin Islands**.
- It is a volcanic arc comprising more than 30 islands and islets.
- The landscape is dominated by subtropical forest types and sclerophyllous shrublands surrounded by steep cliffs.
- It is one of the famous **UNESCO World Heritage** sites of Japan.

First-ever images prove 'lost echidna' not extinct

Attenborough's long-beaked echidna

- It is also known as Sir David's long-beaked echidna or the **Cyclops long-beaked echidna**. It is named in honour of naturalist Sir David Attenborough.
- It is one of three species from **the genus Zaglossus** that inhabits the island of New Guinea. It is the **smallest echidna species**.
- **Habitat:** It lives in the Cyclops Mountains, which are near the cities of Sentani and Jayapura in the **Indonesian province of Papua**.
- Echidnas are **nocturnal and shy**, making them difficult to find at the best of times.
- It appears so unlike other mammals is because **it is a member of the monotremes** -- an **egg-laying group** that separated from the rest of the mammal tree-of-life about 200 million years ago.
- **Conservation status**
- **IUCN Red List:** Critically Endangered

- CITES : Appendix II

Scientists, researchers discover new gecko species endemic to Mizoram

New Gecko species

- The new species has been named '**Cyrtodactylus vairengtensis**' after the town in Mizoram where it was found.
- The common name suggested for the new species is '**Vairengte bent-toed gecko**'.
- The distinct feature of this new species is the number of **femoral pores** which distinguishes it from other members of the Cyrtodactylus family.
- **Femoral pores** are located on the underside of the hind legs in lizards that secrete a **mixture of lipids and proteins** and are thought to be used to attract mates and mark territories.
- It is **endemic to Mizoram**, taking the number of geckos native to the state to 6, and 22 across northeast India.
- There are 335 gecko species across the world, of which 42 are found in India.

Gecko

- These are reptiles and are found on **all the continents except Antarctica**.
- These colorful lizards have adapted to habitats from rainforests, to deserts, to cold mountain slopes.
- These are mostly small, usually nocturnal reptiles.
- Geckos are **spread across six families**: Carphodactylidae, Diplodactylidae, Eublepharidae, Gekkonidae, Phyllodactylidae, and Sphaerodactylidae.

60% increase in overall tiger population, but habitat & biodiversity loss threatening Southeast Asian big cats

Global Tiger Recovery Program (GTRP)

- It was launched in 2010 under the **Global Tiger Initiative** (GTI) by the World Bank to save wild tigers.
- This initiative set up the ambitious target of **reversing the rapid decline** of wild tigers across their range and doubling their population numbers by 2022.
- Alongside these top-level targets, the GTRP set out **urgent thematic actions** at a national level to strengthen wild tiger conservation in sync with this global goal.
- The first GTRP helped to pull focus to wild tiger conservation and secure a collective commitment from TRCs.

- It was endorsed in the **St Petersburg Declaration** in 2010 which **saw 13 tiger range countries** committing to reverse the decline of the species population.
- The 13 tiger range countries are Bangladesh, Bhutan, Cambodia, China, **India**, Indonesia, Lao PDR Malaysia, Myanmar, Nepal, **Russia**, Thailand, and Vietnam.

GTRP 2.0

- It has been firmed up by tiger range countries through the intergovernmental platform of the Global Tiger Forum along with collaborators like the WWF.
- It emphasizes on **strengthening tiger governance, enhancing resources and protection**, while addressing contemporary challenges like Human-Wildlife Conflict.
- It aims to pave the way for tiger **conservation from 2023-2034**.

Red Sanders removed from CITES Review of Significant Trade: Bhupendra Yadav

Red Sanders

- It is a flora species that are endemic to a distinct tract of forests **in the Eastern Ghats region of Andhra Pradesh**.
- **Climatic condition required:** It usually grows in rocky, degraded and fallow lands with Red Soil **and a hot and dry climate**.
- **Protection Status:**
- ****IUCN Red List:****Endangered
- ****CITES:****Appendix II
- ****The Wildlife (Protection) Act 1972:****Schedule IV

CITES

- It is an **international agreement** to which States and regional economic integration organizations adhere voluntarily.
- It was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN (The World Conservation Union). It entered into force in July 1975.
- **Aim:** To **ensure that** international trade in specimens of wild animals and plants does not **threaten the survival of the species**.
- Although CITES is legally binding on the Parties – in other words they have to implement the Convention – it does not take the place of national laws.
- The CITES Secretariat is administered by **UNEP and is located in Geneva, Switzerland**.
- The Conference of the Parties to CITES is the supreme decision-making body of the Convention and comprises all its parties.

- **India** has been a party to CITES since **1976**.

CITES RST process

- It enables **disciplinary action in the form of trade suspensions** directed at countries that do not meet their obligations.
- This is a process through which the CITES Standing Committee places increased scrutiny on the exports of a species from a country to determine if the Convention is being properly implemented.

Mount Etna erupts

Mount Etna

- It is Europe's most active volcano and one of the **largest in the world**.
- Its recorded volcanic activity dates back to 1500 B.C.
- It is on the eastern **coast of Sicily**.
- It is the highest Mediterranean island mountain and the **most active stratovolcano** in the world.
- It is about 3,326 meters high and is the highest peak **in Italy South of the Alps**.

Volcanoes

- Volcanoes are openings, or vents where lava, tephra (small rocks), and steam erupt onto the Earth's surface.
- These **can be on land and in the ocean**.
- They are, in part, a result of their own eruptions but also the general formation of our planet, as tectonic plates move.

Stratovolcano

- It is also called a **composite volcano**.
- This volcanic landform is characterized by a conical shape **formed by layers of volcanic** material deposited during successive volcanic eruptions.
- These volcanoes tend to slope gently at the base but rise quickly near the summit to form tall mountain peaks.
- They are typically **found above subduction zones**, and they are often part of large volcanically active regions, such as the Ring of Fire that frames much of the Pacific Ocean.

Jupiter-sized exoplanet "Wasp-107b" discovered by NASA

Wasp-107b

- It is a **newly discovered exoplanet** situated **200 light-years away** in the

Virgo constellation.

- **The mass of WASP-107b is 30.5 Earths**, and it **takes only six days to orbit its home star**, which is slightly cooler and less massive than our sun.
- It **shares Jupiter's size but possesses the mass of Neptune**, making it **less dense than other gas giants**.
- The planet's low density allowed astronomers to look 50 times deeper into the atmosphere of the planet compared to observations achieved for more dense planets, like Jupiter.
- The **exoplanet is scorching hot** (with an outer atmosphere that's more than 900 degrees Fahrenheit).
- **Sand Rain:**
 - Wasp-107b **exhibits a water cycle akin to Earth's**, but with one peculiar difference: **instead of water droplets, the planet experiences 'sand rain'**.
 - The **falling grains are**, in fact, **silicate vapours rising from lower atmospheric levels**.
 - Similar to Earth's water cycle, **these sand clouds precipitate back to lower planetary atmospheric levels**.
- In addition to the silicate clouds, scientists have **identified water vapour and sulphur dioxide** in the atmosphere of WASP-107b.

Gas giants

- Gas giants are **large planets composed mostly of gases, such as hydrogen and helium**, with a **relatively small rocky core**.
- The **gas giants of our solar system- Jupiter, Saturn, Uranus, and Neptune** together make up a group **known as the Jovian planets (Jupiter-like)**.
- The solar system's four gas giants **reside farthest from the sun, past the orbits of Mars and the asteroid belt**. So they are **also called outer planets**.
- All of the outer planets **have numerous moons**. They all also **have planetary rings, composed of dust and other small particles** that encircle the planet in a thin plane.

Argoland, a continent missing for 155 million years, found off

Argoland

- It was a **lost continent** that once **broke off from northwestern Australia 155 million years ago**.
- The elusive, **3,106-mile stretch** was **once an integral part of the supercontinent Gondwana**.
- It **disintegrated as tectonic forces stretched the landmass out and drove it away** from the rest of the continent **before scattering it across Southeast Asia**.
- It had **initially drifted northwest**, where several Southeast Asian islands

currently exist today.

- But **unlike India, which broke off** the ancient supercontinent **Gondwana** 120 million years ago **and still forms an intact landmass** today, **Argoland splintered into fragments**.
- **These fragments, reaching their destinations simultaneously, formed an archipelago** rather than a unified landmass.
- **Argoland**, now dispersed as an archipelago separated by ocean basins, **contributed to the formation of several Southeast Asian islands**.

Gondwana

- Gondwana **used to be a supercontinent, from around 550 million years ago to approximately 180 million years ago, alongside Laurasia**.
- The continent **eventually split into** the landmasses we recognise today: **Africa, South America, Australia, Antarctica, the Indian Subcontinent, and the Arabian Peninsula**.

Adopt an axolotl' campaign launches in Mexico to save iconic species

- The campaign, **called Adoptaxolotl**, asks people for as little as 600 pesos (about \$35) to virtually adopt one of the tiny "water monsters."

Axolotl

- It is an **aquatic salamander renowned** for its ability to regenerate its spinal cord, heart, and limbs.
- These amphibians also readily make **new neurons throughout their lives**.
- Axolotls, like humans, contain two copies of every gene—one inherited from the father and the other from the mother.
- It is notable for its permanent retention of larval features, such as external gills.
- The species is **found only in Lake Xochimilco**, within Mexico City.
- The name axolotl is also applied to any full-grown larva of *Ambystoma tigrinum* (tiger salamander) that has not yet lost its external gills.
- They feast on a menu of molluscs, worms, insect larvae, crustaceans, and some fish.
- **Conservation status**
 - **IUCN:** Critically endangered.
- **Threats:** Habitat degradation, pollution, fishing, nonnative predators, the pet trade.

Researchers discover new plant species in KMTR Chennai

New plant species

- The species is named '**Impatiens Karuppusamyi**' after S. Karuppusamy for

his contributions to the taxonomy of South Indian angiosperms.

- The plant is **found only in the Agasthyamalai region** in the southern Western Ghats. The plant, which belongs to the scapigerous group (stemless group), is **seen only during the monsoon season for a few weeks.**
- Impatiens is a genus of more than 1,000 species of flowering plants widely **distributed** throughout **tropical Africa, Madagascar, India, Sri Lanka, and China.**

Kalakkad Mundanthurai Tiger Reserve

- It is located in the Southern Western Ghats, in the Tirunelveli and Kanyakumari districts of Tamil Nadu.
- This reserve is a mixture of three main sanctuaries^{**}: Kalakkad Sanctuary, Mundanthurai Sanctuary, and a part of Kanyakumari Sanctuary.^{**}
- **Nestled between Kerala and Tamil Nadu**, the Agastya Malai Hill Range forms the core area of the sanctuary and is part of one of the world's 18 biodiversity hotspots.
- It is also known as ^{**}the "River Sanctuary,"^{**} with as many as 14 rivers originating from this Tiger Reserve.
- **Flora:** This region has vegetation types which gradually change from dry **thorn forest to dry deciduous, moist deciduous** and a patch of West Coast wet evergreen forests on the higher reaches of the reserve.
- **Fauna:** Lion-tailed Macaque, Nilgiri Tahr, Nilgiri Pipit, Grey Headed Bulbul, Blue Winged Parakeet etc.

INTERNATIONAL RELATIONS

Cayman Islands' exit from FATF grey list to boost FDI inflow in India

Cayman Islands

- The Cayman Islands is a **British Overseas Territory located in the Western Caribbean Sea.**
- The territory **comprises the three islands of Grand Cayman, Cayman Brac, and Little Cayman**, located **south of Cuba** and **northwest of Jamaica.**
- **History:**
 - The Cayman Islands were **colonised by the British during the 18th and 19th centuries** and were **administered by Jamaica after 1863.**
 - In 1959, the **islands became a territory within the Federation of the West Indies.**
 - **When the Federation dissolved in 1962, the Cayman Islands chose to remain a British dependency.**
- **Language: English is the predominant language, but many speak local Creole dialects.**
- **Geography:** The geography of the Cayman Islands is **low-lying with coral reefs.**
- **Capital:** Its capital is **George Town**, which is **located on Grand Cayman Island.**
- **Currency:** The **Cayman Island dollar is the official currency**, but American money is widely accepted.
- **Government:** The government system is a **parliamentary democracy**; the **chief of state is the queen of the United Kingdom**, and the **head of government is the premier.**
- **Economy:**
 - The Cayman Islands have a **mixed economic system**, and the islands are a **thriving offshore financial centre.**
 - They are **considered a tax haven** because the **Cayman Islands do not impose a corporate tax**, making it an ideal place for multinational corporations to base subsidiary entities to shield some or all of their incomes from taxation.
 - The Cayman Islands **do not impose taxes on residents.** They **have no income tax, no property taxes, no capital gains taxes**, no payroll taxes, and no withholding tax.
 - Without tax income, the Caymans **earn revenue via fees related to**

tourism and work permits, financial transactions, and import duties.

Rise in intimidation, settler violence in the West Bank, warns OCHA

UN-OHCA

- It was established by the General **Assembly of the United Nations in 1991.**
- It is responsible for bringing together humanitarian actors to ensure a coherent response to emergencies.
- It also ensures there is a framework within which each actor can contribute to the overall response effort.
- It replaced the Office of **the United Nations Disaster Relief Coordinator**(UNDRO).
- **On-Site Operations Coordination Centres** (OSOCC), an OCHA tool, provide a platform for the coordination of international response activities immediately following a sudden-onset emergency or a rapid change in a complex emergency.
- **Funds:** There are **two types of pooled funds:**
 - **Central Emergency Response Fund**(CERF), which can fund an emergency anywhere in the world.
 - **Country-Based Pooled Funds**(CBPFs), which are country-specific.
- It has two headquarters locations, **Geneva and New York**, which act as centres of global operations.

Bolivia severs ties with Israel, others recall envoys over Gaza

Bolivia "has decided to cut diplomatic relations with the State of Israel, in repudiation and condemnation of the aggressive and disproportionate Israeli military offensive being carried out in the Gaza Strip

Bolivia

- Bolivia, **officially the Plurinational State of Bolivia**, is a **landlocked country** located in **western-central South America.**
- It is **named after independence fighter Simon Bolivar.**
- The country is **located in the rugged Andes Mountains, with a highland plateau and lowland plains in the Amazon basin.**
- **One-third** of the country **is within the Andean mountain range.**
- **Bordering Countries:** It borders the countries of **Argentina, Brazil, Chile, Paraguay, and Peru.**
- **Capital:** The **constitutional capital is Sucre**, while the **seat of government**

and executive capital is **La Paz**.

- Bolivia **shares control of Lago Titicaca, the world's highest lake navigable to large vessels**, at 12,500 feet above sea level.
- **History:**
 - During the **15th and 16th centuries**, an **ancient civilization called the Inca reigned** over the region.
 - **In 1538, Spanish** conquistadors (or 'conquerors') arrived from Europe and **gained control** of the territory.
 - It **broke away from Spanish rule in 1825**.
 - Much of its **subsequent history** has **consisted of a series of coups** and counter coups, with the last coup occurring in 1978.
 - **Democratic civilian rule** was **established in 1982**.
- **Government:**
 - The government system **is a republic**; the new constitution defines Bolivia as a **"Social Unitarian State."**
 - The **chief of state** and **head of government is the president**.
- **Currency: Bolivian boliviano**
- **Official Language:** It has **37 official languages, including Spanish**.
- Bolivia has a **mixed economic system** that includes a variety of **private freedoms combined with centralised economic planning** and government regulation.

Quad's IPMDA a proof of our commitment to a free, open, inclusive Indo-Pacific: Navy Chief.

Indo-Pacific Maritime Domain Awareness (IPMDA) initiative

- It was announced **at the 2022 Quad Leaders' Summit** in Tokyo.
- It was announced to track **"dark shipping"** and build a "faster, wider, and more accurate maritime picture of near-real-time activities in partners' waters", **integrating** three critical regions in the Indo-Pacific — **the Pacific Islands, Southeast Asia, and the IOR**.
- **Purpose of IPMDA**
- It is a **technology and training initiative** to enhance maritime domain awareness in the Indo-Pacific region and to bring increased transparency to its critical waterways.
- It **harnesses innovative technology**, such as commercial satellite radio frequency data collection, to provide partners across Southeast Asia, the Indian Ocean region and the Pacific with near real-time information on activities occurring in their maritime zones.

QUAD

- It is known as the 'Quadrilateral Security Dialogue' (QSD).
- It is an informal strategic forum comprising four nations, namely -- **United States of America (USA), India, Australia and Japan**.

- **Objectives:** To work for a free, open, prosperous, and inclusive Indo-Pacific region.
- It is considered an alliance of maritime democracies, and the forum is maintained by meetings, semi-regular summits, information exchanges and military drills of all the member countries.
- **Formation of QUAD**
- Since its **establishment in 2007**, the representatives for the four-member nations have met periodically. Japanese Prime Minister Shinzo Abe was the first to pitch the idea for the formation of Quad in 2007.
- In fact, its origins can be traced back to the evolution of Exercise Malabar and the 2004 Tsunami when India conducted relief and rescue operations for itself and neighbouring countries and was later joined by the US, Japan and Australia.

IIT Madras opens offshore campus in Zanzibar, Tanzania

Tanzania

- It is an African country situated just **south of the Equator**.
- Dar es Salaam is the largest city and port city of this country.
- **Location**
- The mainland is bounded by **Uganda, Lake Victoria, and Kenya** to the **north**.
- By the **Indian Ocean to the east**, by **Mozambique, Lake Nyasa, Malawi, and Zambia** to the **south and southwest**
- By Lake **Tanganyika, Burundi, and Rwanda** to the **west**.
- **Highest mountain: Mount Kilimanjaro** which is located in northeastern Tanzania.
- **Major Rivers:** Ruvuma, Rufiji, Wami, and the Pangani (drain into the Indian Ocean).
- **Climate**
- Mainland Tanzania can be divided into four principal climatic and topographic areas
- The **hot and humid coastal lowlands** of the Indian Ocean shoreline
- The **hot and arid zone** of the broad **central plateau**,
- The **high inland mountain** and lake region of the northern border,
- The highlands of the northeast and southwest, the climates of which range from **tropical to temperate**.
- The majority of Tanzanians are of **Bantu descent**.
- Tanzania has two official languages namely **Swahili (kiSwahili) and English**.

India & Bangladesh navies undertake corpat & ex Bongosagar

Exercise CORPAT and Bongosagar

- It is the **4th edition of the BONGOSAGAR** and the **5th edition of Coordinated Patrol (CORPAT) exercise**. Both are **bilateral naval exercise**.
- **Indian Navy Ships Kuthar, Kiltan and Maritime Patrol Aircraft (MPA)** Dornier participated in the exercise along with Bangladesh Navy Ships Abu Bakr and Abu Ubaidah.
- CORPAT-23 also included the **maiden Humanitarian Assistance and Disaster Relief (HADR)** drills conducted between the two navies wherein a Search and Rescue scenario at sea was exercised.
- **INS Kuthar** is an indigenously built guided-missile Corvette, whereas **INS Kiltan** is an indigenously built anti-submarine Corvette.

Altmin inks pact with Bolivian YLB

Indo-Pacific Economic Framework for Prosperity (IPEF):

- It is a **regional arrangement to build** cooperation and **economic integration in the Indo-Pacific region**.
- It was **launched by United States** President Joe Biden **on May 23, 2022**.
- This framework is **intended to advance resilience, sustainability, inclusiveness, economic growth**, fairness, and competitiveness **for member economies**.
- IPEF will seek to complement and **build on existing regional architecture** and **support the global rules-based trading system**.
- It currently **includes 14 partner countries: Australia, Brunei Darussalam, Fiji, India, Indonesia, Japan, the Republic of Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, the United States, and Vietnam**.
- The economic framework broadly **rests on four pillars**:
 - **Trade**
 - **Supply chain resilience**
 - **Clean Energy**, Decarbonization, and **Infrastructure**
 - **Taxes and anti-corruption** measures
- The IPEF is **not a Free Trade Agreement (FTA)**, but it **allows members to negotiate the parts they want to**.
- **India and IPEF**:
 - India has been **actively participating in the IPEF**, but **not in all pillars**.
 - India has **decided to opt out of the trade pillar of the IPEF** as most issues promoted by the IPEF do not align with India's trade policies.

9th India International Science Festival (IISF) 2023 to be held

India International Science Festival

- It will be held at the Campus of Translational Health Science and Technology Institute (THSTI) and Regional Centre for Biotechnology (RCB) of the

Department of Biotechnology in Faridabad.

- **Theme:** 'Science and Technology Public Outreach in Amrit Kaal'.
- IISF 2023 aims to provide a platform for inspiring the public at large and individuals with diverse levels of interests, like students, educators, scientists, researchers, industry professionals, entrepreneurs, and science communicators.
- IISF 2023 will have **a total of 17 themes** to showcase scientific achievements, offering diverse benefits to participants and the general public.
- The IISF is dedicated to fostering creativity in Science, Technology and Innovation for the advancement of prosperous India.
- It is an initiative of the **Ministry of Science and Technology** and the **Ministry of Earth Sciences** in association with Vijnana Bharati.
- Since 2015, the IISF has hosted eight editions in different geographical regions of India and expanded as a mega science festival.
- In 2021, the Department of Space and the Department of Atomic Energy became an integral part of IISF.

India votes in favour of UNGA resolution that expresses deep concern over Israel not withdrawing from Syrian Golan

Golan Heights

- It is a **rocky plateau in south-western Syria**, about 60km (40 miles) **south-west of** the Capital, **Damascus**.
- It is **bounded by** the **Jordan River** and the **Sea of Galilee** on the west, **Mount Hermon** on the north, the seasonal **Wadi Al-Ruqqād River** on the east, and the **Yarmūk River** on the south.
- The Golan extends about 44 miles (71 km) from north to south and about 27 miles (43 km) from east to west at its widest point.
- It is **roughly boat-shaped** and has an area of **1,150 square kilometres**.
- **History:**
 - **Israel seized** the Golan Heights from Syria **in the closing stages of the 1967 Six-Day War**.
 - Most of the Syrian Arab inhabitants fled the area during the conflict.
 - An armistice line was established, and the region came under Israeli military control. Almost immediately, Israel began to settle the Golan.
 - **Syria tried to retake** the Golan Heights **during the 1973 Middle East** Despite inflicting heavy losses on Israeli forces, the surprise **assault was thwarted**.
 - Both **countries signed an armistice in 1974**, and a **UN observer force has been in place** on the ceasefire line **since 1974**.
 - **Israel unilaterally annexed the Golan Heights in 1981**.
- There are more than **30 Israeli settlements** in the Golan. The settlements are **considered illegal under international law**, although Israel disputes this.
- About **20,000 Syrians and 20,000 Israelis live** in the Golan.

- **Strategic Importance:**
 - The **Syrian capital, Damascus**, can be **clearly seen** from the **top of the Golan Hills**.
 - Apart from this, the **land here is very fertile**, which is very good for farming.

DEFENCE & SPACE

Army's Light Combat Helicopter Prachand successfully carries out inaugural firing

Light Combat Helicopter Prachand

- It is India's first indigenous multi-role combat helicopter, developed by **Hindustan Aeronautics Limited (HAL)**.
- It is designed to meet the needs of the Indian armed **forces operating in deserts and mountainous areas**.
- The helicopter is fitted with Shakti Engine, which is co-developed by HAL and France's Safran.
- The helicopter received operational clearance in 2017.
- **Features**
 - It can fly at a maximum **speed of 288 kmph** and has a combat radius of 500 km, which can go up to a **service ceiling of 21,000 feet**.
 - The helicopter can carry out activities such as Combat Search and Rescue (CSAR), Destruction of Enemy Air Defence (DEAD), operations against slow-moving aircraft and Remotely Piloted Aircraft (RPAs), high-altitude bunker busting operations, counter-insurgency operations in the jungle and urban environments, and provide support to ground forces.
- The helicopter will be **equipped with Helina missiles**, the air force version of which is called Dhruvastra.

US to test-launch its Minuteman III ICBM

- The launch of this missile will take place today at the **Vandenberg Space Force Base in Southern California**.
- The silo-launched missile will be **tested without a warhead attached**.
- The announcement comes amid rising geopolitical tensions as the Russia-Ukraine conflict drags on, the Israel-Hamas war escalates, and US-China relations continue to deteriorate.

Minuteman III missile

- It is a strategic weapon system using a ballistic missile of **intercontinental range** and first became **operational in the early 1970s**.
- Originally, it was only supposed to be kept in **service for about ten years**, but instead, it has been modernized as **its replacement, the Ground-Based Strategic Deterrent (GBSD)**, is due to **become available for use in 2029**.
- It is a **three-stage, solid-fuel missile**.
- Its **length is 18.2 metres**, and **its diameter is 1.85 metres**.
- Its range is **6,000-plus miles**, and its **maximum range is about 8,000 miles**.
- **Boeing Corporation** designed and manufactured this missile.
- The current ICBM force consists of 400 Minuteman III missiles.
- It is **currently the only land-based ICBM in the US nuclear arsenal**, which also includes **Trident submarine-launched ballistic missiles** and **nuclear weapons** carried by strategic bomber aircraft.

NASA Rocket to See Sizzling Edge of Star-Forming Supernova

INFUSE Mission

- The **Integral Field Ultraviolet Spectroscope Experiment (INFUSE)** was launched from the White Sands Missile Range in New Mexico.
- It was launched to study the **Cygnus Loop**, a supernova remnant.

INFUSE mission

- The INFUSE mission is expected to collect information about the remnant for a few minutes from a height of 150 miles (240 km).
- Specifically, the instrument **will gather light streaming from the Cygnus Loop** in far-ultraviolet wavelengths.
- It will observe how the supernova dumps energy into the Milky Way by catching light given off just as the blast wave crashes into pockets of cold gas floating around the galaxy.
- It will study the Cygnus Loop and try to **understand the life cycle of stars**.

Cygnus Loop

- It is the remnant of a star that was once 20 times the size of our Sun.
- Some 20,000 years ago, that star collapsed under its own gravity and erupted into a supernova.
- Even from 2,600 light-years away, astronomers estimate the flash of light would have been bright enough to see from Earth during the day.

Nasa's Lucy Spacecraft successfully flies past asteroid 'Dinky'

Lucy Mission

- It is a first-of-its-kind **mission of NASA** that will **explore Jupiter's elusive Trojan asteroids**.
- It was successfully launched on October 16, 2021, from the Kennedy Space Centre in Florida, US.
- Over its **12-year mission**, Lucy will **explore** a record-breaking **number of asteroids**: it will fly by **two in the belt of asteroids that circle the Sun between the orbits of Mars and Jupiter**, and **then 10 Trojans**, which includes five asteroid targets and the satellites of three of those.
- Lucy will **also fly by Earth three times to get a push from its gravity**, making it the **first spacecraft to return to the vicinity of Earth from the outer solar system**.
- The spacecraft **carries two infrared spectrometers** and four cameras.

Trojan Asteroids

- Asteroids **that share an orbit with a planet** but are **located at the leading (L4) and trailing (L5) Lagrangian points** are known as Trojan asteroids.
- These asteroids **occupy a stable Lagrangian point in a planet's orbit** around the Sun.
- They are some of the **oldest remnants from the formation of our solar system** 5 billion years ago.
- There are **currently over 4,800 known Trojan asteroids associated with Jupiter**.
- They **orbit the Sun in two loose groups: one group leading ahead of Jupiter in its orbit, the other trailing behind at the same distance from the Sun as Jupiter**.

Lagrange point

- Lagrange Points are **positions in space** where the **gravitational forces of a two-body system** like the Sun and the Earth **produce enhanced regions of attraction and repulsion**.
- Lagrange Points are **positions where the gravitational pull of two large masses** precisely **equals the centripetal force required for a small object to move with them**.
- These **can be used by spacecraft to reduce fuel consumption** needed to remain in position.

'Unique' Cosmic Light Show to Fill Skies Across the Globe This Weekend

Taurid meteor shower

- The Taurid meteors are debris from the **periodic Comet 2P/Encke**, which has the shortest known orbital period for a comet (it takes only 3.3 years to make one complete trip around the sun).
- These showers are named after the **constellation Taurus**.

- It is unique in that it comprises **two distinct streams** (i.e., Southern and Northern Taurids), both of which have spread over time due to the gravitational influence of Jupiter.
- It can be seen with the naked eye and is best viewed at around midnight.
- These are modest, offering fewer than 10 shooting stars per hour on peak nights.
- However, **November is one of the better months** for shooting stars because there are many sporadic meteors

Meteoroid, Meteor and Meteorite

- A meteoroid is an object in space that ranges in size from dust grains to **small asteroids**.
- When meteoroids enter Earth's atmosphere (or that of another planet, like Mars) at high speed and burn up, the fireballs, or "**shooting stars**" are called **meteors**.
- When a **meteoroid survives** a trip through the atmosphere and hits the ground, it's called a

Significance of Meteors

- It helps in understanding early conditions and **processes in the solar system's history**.
- These include the age and composition of different planetary building blocks, the temperatures achieved at the surfaces and interiors of asteroids, and the degree to which materials were shocked by impacts in the past.

TEDBF Prototype will be ready in 4-5 years

Twin Engine Deck Based Fighter (TEDBF)

- It is a **canard delta-wing, twin-engine, carrier-based, multirole combat aircraft** currently under development **for the Indian Navy**.
- The TEDBF is being **indigenously designed** and developed **by the Aeronautical Development Agency (ADA)** and will be **manufactured by Hindustan Aeronautics Limited (HAL)**.
- It is **intended for carrier-based operations** and is expected to **replace the ageing MiG-29K fighters on the INS Vikramaditya and the upcoming INS Vikrant** aircraft carriers.
- **Key Features:**
- The TEDBF's **twin engines will enable shorter take-offs from** the Indian Navy's Short Take-Off Barrier Arrested Recovery (STOBAR) **aircraft carriers**.
- It will have a **maximum take-off weight** of between **24 and 26**
- The TEDBF fighters will be able to **reach Mach 1.6 speeds**.
- **Designed specifically for carrier-based operations**, the TEDBF will **feature foldable wings for more compact storage**, enhancing the flexibility of carrier

operations.

- It will be **equipped with various homegrown Indian weapon systems** and avionics.
- It is intended to **perform various missions**, including **air supremacy, air interdiction, anti-access/area denial (A2/AD)**, anti-ship warfare (ASW), and electronic warfare (EW) missions.

Canard on an aeroplane

- A canard is a **fuselage-mounted, horizontal surface** that is **located forward of the main wing** to **provide longitudinal stability** and control.
- Depending upon the installation, it **may be a fixed, moveable, or variable geometry surface** and **may or may not incorporate control surfaces**.

Delta Wing

- A delta wing is a type of **wing design characterised by a triangular or delta-shaped planform**.
- In this design, the wing **has a straight leading edge and a swept-back trailing edge**, forming a **shape reminiscent of the Greek letter "delta" (Δ)**.
- **Advantages:**
- The delta wing offers advantages in **structural integrity** and **both high-speed and low-speed flight**.
- Because of the **wing's large surface area compared to its span**, it can be **built stronger** and stiffer and also has a **greater internal volume for fuel storage**.
- Delta wing aircraft **do not require a horizontal tail**.
- **Disadvantage: Higher viscous drag** due to the large wing area.

Project Kusha: India's long-range air defence

Project Kusha

- 'Project Kusha' is set to **provide the Indian Air Force (IAF) with a long-range air defence system**, with deployment **targeted for 2028-29**.
- The ambitious indigenous project will be **developed by the** Defence Research and Development Organisation (DRDO) at an estimated **budget of Rs 21,700 crore**.
- **Drawing parallels with Israel's** renowned **Iron Dome** system, 'Project Kusha' is **expected to not only match but potentially surpass the capabilities of its Israeli counterpart**.
- It aims to **detect and destroy various hostile targets**, including cruise missiles, stealth fighter jets, and drones **at extended ranges**.
- **Key Features:**
- The long-range surface-to-air defence system (LR-SAM) **incorporates advanced long-range surveillance and fire control radars**, which empower

the IAF to effectively monitor airspace and fend off enemy threats.

- **Interceptor missiles**, with **ranges of 150 km, 200 km, and 350 km**, provide the **ability to detect and strike hostile targets at different distances**.
- It will also be effective in **providing strategic and tactical cover**.
- The system reportedly has a ****single-shot kill chance of at least 80%**** and **over 90% when two missiles are fired** after each other.
- The **firing units** of 'Project Kusha' **can seamlessly integrate with the IAF's air command and control system, facilitating coordination with** a wide range of **military radars**.

Iron Dome

- It is **Israel's air missile defense system** that can defend against short-range rockets, intercepting them in the air above the state.
- It is capable of successfully **handling multiple rockets at a time**.
- **Developed by Rafael Advanced Defense Systems and Israel Aerospace Industries**, the system became **operational in March 2011**.
- **Features:**
- The Iron Dome **functions by detecting, analysing, and intercepting** varieties of targets such as mortars, rockets, and artillery.
- It is **powered by missile-defense batteries**.
- It has **all-weather capabilities** and is able to function night or day.
- It is **able to launch a variety of interceptor missiles**.
- It is designed to shoot down missiles with a **range of about 40 miles or less**.
- It must be **reloaded continuously** to intercept incoming missiles.

CRPF mulls CoBRA withdrawal from Jammu & Kashmir

Commando Battalions for Resolute Action (CoBRA)

- Established in 2008, CoBRA is a **specialised unit of the** Central Reserve Police Force (**CRPF**).
- It is one of the few units of the CRPF in the country that is **specifically trained in guerilla tactics and jungle warfare**.
- They are also **known as 'jungle warriors'**.
- **Originally established to counter the Naxalite problem** (it was originally trained to track, hunt, and eliminate Naxalite groups), CoBRA is **deployed within India to address any insurgent group** engaging in asymmetrical warfare.
- **Personnel** for CoBRA **are selected from CRPF**, as CoBRA is an integral part of CRPF.
- They **undergo rigorous commando and jungle warfare training** before being posted to CoBRA units for operations.
- It **has 10 units**, raised between 2008 and 2011
- The **majority of CoBRA teams are deployed in various Maoist violence-affected states**, while a **few are based in the northeastern states**

to undertake **counter-insurgency operations**.

Central Reserve Police Force (CRPF)

- It is the **premier central police force** of the Union of India for internal security.
- It **functions under** the authority of the ****Ministry of Home Affairs (MHA)**** of the Government of India.
- **History of CRPF:**
- **Originally constituted as the Crown Representative Police in 1939**, it is **one of the oldest** Central paramilitary forces (now termed the Central Armed Police Force).
- CRPF was **raised as a sequel to the political unrest and agitations in the then princely States** of India following the Madras Resolution of the All-India Congress Committee in 1936 and the ever-growing desire of the Crown Representative to help the vast majority of the native States to preserve law and order as a part of imperial policy.
- It **became the CRPF on enactment of the CRPF Act on 28th December**
- **Duties performed by the CRPF are**
- Crowd control, **Riot control**
- **Counter Militancy / Insurgency operations**, Dealing with Left Wing Extremism
- Overall co-ordination of ****large-scale security arrangements,**** especially **with regard to elections** in disturbed areas.
- **Protection of VIPs and vital installations**
- Checking environmental degradation and protection of local flora and fauna
- Fighting aggression during wartime
- Participating in **UN Peacekeeping missions**
- **Rescue and Relief operations** at the time of **natural calamities**.

Army set to induct 1st batch of Apache attack helicopters

Apache Attack Helicopter

- It is the world's most **advanced multi-role combat helicopter**.
- **Country of Origin: United States**
- **Manufacturer: Boeing**
- It is also **known as the Apache Guardian**.
- The **AH-64E** attack helicopter **is the latest version** of the Apache **used by the US Army**.
- **Other purchasers: India, Egypt, Greece, Indonesia, Israel, Japan, South Korea, Kuwait, Netherlands, Qatar, Saudi Arabia, Singapore, UAE, and the UK.**
- **Features of AH-64E Apache:**
- It is designed and equipped with open **systems architecture** to incorporate the latest communications, navigation, sensor, and weapon systems.

- It has **greater thrust and lift, joint digital operability**, improved survivability, and **cognitive decision-aiding**.
- The AH-64E includes a new **integrated infrared laser** that **allows for easier target designation** and **enhanced infrared imagery** that blends **infrared and night vision capabilities**.
- **Apache for Indian Defence Forces:** The **Indian Air Force** has a fleet of **22 AH-64E Apache** attack helicopters, and **in 2020, Boeing signed an agreement with** the Government of **India for the acquisition of six more Apache helicopters for the Indian Army**.

Europe's Euclid space telescope releases first images

Euclid Space Telescope

- The Euclid mission is **part of ESA's Cosmic Vision programme**, which **aims to explore the origin and components of the universe** and the fundamental laws that govern it.
- Its **main goal is to investigate the "dark side" of the universe, focusing on dark matter and dark energy**.
- It was launched on 1 July 2023.
- It is **named after the Greek mathematician Euclid of Alexandria**, who lived around 300 BC and **founded the subject of geometry**.
- The Euclid mission **will make a 3D map of the universe** (with time as the third dimension) **by observing billions of galaxies** out to 10 billion light-years **across more than a third of the sky**.
- It will **reveal how dark energy has influenced the stretching and separation of matter** over cosmic time.
- **Spacecraft and instruments:**
- The Euclid **spacecraft is approximately 7 m tall and 3.7 m in diameter**. It consists of two **major components: the service module and the payload module**.
- The **payload module comprises a 2-m-diameter telescope** and two scientific instruments: a **visible-wavelength camera** (the VISible instrument, VIS) and a **near-infrared camera/spectrometer** (the Near-Infrared Spectrometer and Photometer, NISP).
- **The service module contains the satellite systems:** electric power generation and distribution, attitude control, data processing electronics, propulsion, telecommand and telemetry, and thermal control.
- **Orbit:** Its **operational orbit will be a halo around a point known as the Sun-Earth Lagrange Point 2 (L2)**, at an average distance of **5 million km beyond Earth's orbit**.
- **Lifetime:** Nominal mission lifetime is **six years**, with the **possibility of extension** (limited by the amount of cold gas used for propulsion).

Dark Energy

- Dark energy is the name given to the **mysterious force that's causing the rate of expansion of our universe to accelerate over time** rather than to slow down.
- It is now thought to **make up 68% of everything in the universe.**
- It's not matter or energy in the conventional sense. It **does not interact with electromagnetic forces** and, therefore, **cannot be observed directly.**

US Submarine In Middle East To Prevent Gaza War

Ohio-class Submarine

- The Ohio class is a class of **nuclear-powered submarines** currently **used by the United States Navy.**
- They are the **largest submarines** ever **built for the U.S. Navy.**
- The US Navy has a **total of 18 Ohio-class submarines**, which consist of **14 ballistic missile submarines (SSBNs)** and **four cruise missile submarines (SSGNs).**
- **The SSBN** submarines are also **known as "Trident" submarines** and **provide the sea-based leg of the U.S. nuclear triad.**
- The **14 SSBNs together carry about half of S. active strategic thermonuclear warheads.**
- They were **designed specifically for extended war deterrence**
- **Features:**
- The class's design allows the warship to **operate for about fifteen years between major overhauls.**
- Each of these submarines is **provided with two complete crews**, called the Blue Crew and the Gold Crew, with each crew **serving typically on 70- to 90-day deterrent patrols.**
- They **can travel at speeds of 30+ knots** and **remain submerged indefinitely.**
- **Each SSBN submarine is armed with up to 24 Trident II** submarine-launched **ballistic missiles (SLBM).**
- **Each SSGN is capable of carrying 154 Tomahawk cruise missiles**, plus a complement of Harpoon missiles to be fired through their torpedo tubes.

Iia's Observatory Captures Aurora From Hanle And Merak

Stable Auroral Arc

- It is a rare atmospheric phenomenon which was observed during a strong G3-class **geomagnetic storm.**
- Unlike auroras, which occur when charged particles from space hit the

atmosphere causing it to glow, SAR arcs form differently.

- They are an indication of **heat energy leaking into the upper atmosphere** from Earth's ring current system, a donut-shaped circuit carrying millions of amps around our planet.
- During the recent geomagnetic storm, the ring current was energised by hours of intense geomagnetic activity, with energy dissipating into these SAR arcs.
- This global event was registered in many parts of the world.

How does Aurora form?

- It is formed when 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**.

Five new pulsars discovered with FAST.

Five-hundred Aperture Spherical Telescope (FAST)

- It is a **radio telescope in China's Guizhou Province**.
- It is the **world's largest and most sensitive radio telescope**, with a **receiving area** equivalent to **30 football fields**.
- It measures **500 meters in diameter**.
- **Scientific Goals:**
- **Detect neutral hydrogen** at the edge of the universe; **reconstruct the images of the early universe**;
- **Discover pulsars**, establish a pulsar timing array, and **participate in pulsar navigation and gravitational wave detection** in the future;
- Join the International Very-Long-Baseline Interferometry Network to **obtain hyperfine structures of celestial bodies**;
- Perform **high resolution radio spectral survey**. **Detect weak space signals**;
- Participate in the **search for extraterrestrial intelligence**.
- FAST **uses a data system developed at ICRAR** (International Center for Radio Astronomy) **in Perth, Australia, and at ESO** (European Southern Observatory) **to manage** the huge amounts of **data it generates**.

Pulsars

- Pulsars are **rapidly rotating neutron stars that blast out pulses of radiation at regular intervals** ranging from seconds to milliseconds.
- Pulsars **have strong magnetic fields that funnel particles along their**

magnetic poles, accelerating them to relativistic speeds, which **produce two powerful beams of light, one from each pole.**

- **Because the poles of the magnetic field aren't aligned with the axis of spin of the pulsar**, the beams of **particles and the light they produce are swept around** as the pulsar rotates.
- The **periodicity of pulsars is caused by these beams of light crossing the line of sight on Earth**, with the pulsar appearing to 'switch off' at points when the light is facing away from us.
- The **time between these pulses is the 'period' of the pulsar.**

Neutron star

- When a **massive star explodes** as a supernova at **the end of its life, its core can collapse into a tiny and superdense object** with not much more than our sun's mass.
- **These small, incredibly dense cores of exploded stars are neutron stars.**

India set to boost surveillance capabilities with Israeli Hermes 900 Starliners drones

Hermes 900 Starliner

- It is an **Israeli-made medium-altitude, long-endurance** unmanned aerial vehicle (**UAV**).
- It is the **larger variant of the Hermes 900.**
- **Features:**
- It has a wingspan of 17m and a maximum **take-off weight of 1,600kg.**
- The aircraft has a **service ceiling of 30,000ft** and offers a **flight endurance of up to 36 hours.**
- The aircraft's **automatic take-off and landing (ATOL) capability** allows it to take-off and land in near-zero visibility environments.
- An **active de-icing system** is installed for removing ice from surfaces to ensure safe operation in icing conditions.
- It **can carry** a range of **multi-sensor payloads weighing up to 450kg** for multiple applications.
- The **onboard imaging sensors** capture real-time imagery/video and **provide wide-area persistent surveillance** during both the day and night.
- It is equipped with a **terrain avoidance warning system (TAWS)** for terrain prediction and obstacle avoidance.
- It is equipped with **synthetic aperture radar (SAR)**, a **ground moving target indicator (GMTI) radar**, and maritime patrol radar to detect, locate and acquire targets.
- It can **also carry electronic warfare payloads** to provide airborne electronic attack capability.

NASA Shares Stunning Image Of Aurora Taken From International Space Station

Auroras

- An aurora is a **natural phenomenon** that is characterised by a **display of a natural-coloured** (green, red, yellow, or white) **light in the sky**.
- **What causes it?**
- It is a light show which is caused when **electrically-charged particles from the sun interact with the Earth's magnetosphere and atmosphere**.
- Solar particles **interact with** different types of **gas molecules in the atmosphere**, mostly nitrogen and oxygen**, resulting in unique, colored displays of light.**
- **Oxygen gives off green and red light**, while **nitrogen glows blue and reddish-purple**.
- It is sometimes **referred to as 'polar light'**. It is **predominantly seen in regions of high altitudes** like the Arctic and Antarctic.
- **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).
- Auroras **can appear in various forms**, like **streamers, patches, arcs, scattered light**, diffused light, etc.

Do other planets have Auroras

- **Earth isn't the only planet** that experiences auroras.
- **Any planet with an atmosphere and a magnetic field is likely to have auroras**.
- Auroras have been **observed on Saturn and Jupiter**.

White Holes — Carlo Rovelli takes us on a flight into space and time

- These are **considered the opposite of black holes and might generate new universes, a theoretical idea supported by the math**

White Holes vs. Black Holes: White holes are akin to a movie running in reverse. Matter falling into a black hole, according to Rovelli, **bounces back in the form of a white hole**, predicted by quantum mechanics, and **alters our understanding of space and time**

- **Quantum Bounce Theory:** Black holes potentially **transition to white holes via a bounce**. This theory suggests the **possibility of a universe emerging from a white hole** creating something similar to the **Big Bang, implying we might be products of a "big bounce."**
- **Concept of Time:** Rovelli suggests that time isn't uniform, as discovered

through relativistic effects, where it passes differently for different observers. **It's a product of space-time, influenced by gravity and subject to quantum granular aspects.**

- **Space-Time and Quantum Effects:** The combination of **quantum mechanics and gravity** indicates that **space-time might have granular aspects**, influenced by what's known as "**time-steps**" or **atoms in space that are static entities shaping space itself.**

Arrow 3: Israel used a weapon it never has before to neutralise an incoming missile

Arrow-3 Missile Defence System

- It is an **exo-atmospheric anti-ballistic missile defence system** for long-range threat engagement.
- The missile was **jointly developed by Israel Aerospace Industries and the Missile Defence Agency in the US.**
- Initially deployed in 2017, Arrow-3 is the **top layer of Israel's sophisticated air-defense network.**
- It is **designed to take out ballistic missiles while they are still outside of the atmosphere.**
- **Features:**
- It uses **two-stage solid-fueled interceptors** to engage short- and medium-range ballistic missiles and **consists of a launcher, radar, and battle management system.**
- It provides a **range of 2,400km** and can **intercept threats at an altitude of 100km.**
- It **has early warning and fire control radar.** It **provides** extended-range acquisition as well as **multi-target acquisition and tracking capabilities.**
- **How does it work?**
- It **uses hit-to-kill technology to destroy** incoming **missiles.**
- The **missile is launched vertically, and then the direction is changed towards** the estimated **interception point.**
- The high-resolution electro-optical **sensor acquires the target for the kill vehicle to hit** the target **and destroy the warhead.**

Russia to Supply, License Production of Igla Anti-Aircraft Missiles to India

Igla-S

- It is a **man-portable air defence system (MANPADS)** developed **by Russia.**
- It is **known in the West as SA-24 Grinch.**
- It **entered service** with the Russian Army **in 2004.**
- It can be **fired by an individual or crew** to bring down an enemy aircraft.

- It has the **capability of bringing down low-flying aircraft**. It can also identify and **neutralise** air targets, such as **cruise missiles and drones**.
- **Features:**
- The Iгла-S **system comprises** of combat equipment, including the **9M342 missile** and the **9P522 launching mechanism**, along with **maintenance equipment**, including the **9V866-2 mobile test station** and the **9F719-2 test set**.
- It has an effective **range upto 6 km**.
- The **limiting altitude of effective target destruction** for the "Iгла-S" complex is **3.5 km**.
- It has a **heavier, more powerful warhead** to maximize damage capabilities, as well as **contact and timed fuzes for increased attack range**.
- The **warhead is a high-explosive fragmentation (HE-FRAG)** and weighs **2.5 kg**.
- **Guidance is homing via infrared**.

MUCH ANTICIPATED JOINT MILITARY EXERCISE 'TRISHAKTI PRAHAR' BEGINS ON WESTERN FRONT OF RAJASTHAN.

Trishakti Prahar

- It is a **joint military exercise involving the Indian Army, the Indian Navy, and the Indian Air Force**.
- **Objectives:**
- It aims to **enhance mutual coordination** and **operational efficiency**.
- It seeks to **create new strategies** and **assess operational capabilities in the context of modern warfare**.
- During the exercise, **all three wings of the Indian Army** actively **engage in live practice sessions**, simulating real war scenarios with complete coordination.
- The exercise **includes long-range attacks by reconnaissance aircraft**, emphasizing precision and high-volume attacks **to effectively neutralize hypothetical adversaries**.
- It involves a diverse array of military assets, including various types of **howitzers, helicopters**, and weaponry. This encompasses the deployment of **the Army's T-90s and Arjun main battle tanks**.
- A **major highlight** of the exercise is the **demonstration of the operational capability** and readiness **of the Pune-based Southwestern Command of the Indian Air Force**. This segment **showcases** the **Air Force's preparedness for integrated air-land operations**, combined arms operations, and its fast mobility and **deep strike offensive capabilities**.
- **Fighter aircraft, Apache attack helicopters, Chinook heavy lift helicopters**, and various **Navy aircraft** contribute to the multifaceted nature of the exercise.
- It serves as a **platform to evaluate** the **effectiveness of modern warfare technologies** such as unmanned aerial vehicles, precision-guided missiles,

loiter munitions, counter-drone systems, communication systems, and automatic spectrum monitoring systems **in a simulated operational environment.**

The Red Planet hides behind the sun

Mars solar conjunction

- It is a phenomenon which occurs when **the Sun is between Earth and Mars.**
- It happens **once every two years.**
- During this time, Sun **expels hot, ionised gas from its corona.**
- It could corrupt radio signals sent from Earth to Mars.
- Also, this could cause unexpected behaviour from the spacecraft on Mars.
- This year, it is occurring between November 11 and November 25.

Mars

- It is the **fourth planet in the solar** system in order of distance from the Sun and seventh in size and mass.
- It is a periodically conspicuous reddish object in the night sky.
- The planet's two moons, **Phobos** (Greek: "Fear") and **Deimos** ("Terror").
- It has a **very thin atmosphere.**
- The bright rust color Mars is known for is **due to iron-rich minerals** in its regolith — the loose dust and rock covering its surface

AstroSat : India's First Multi-Wavelength Space Telescope

AstroSat

- It is **India's first dedicated multi-wavelength space observatory** aimed at studying celestial sources in **X-ray, optical, and UV spectral bands** simultaneously.
- AstroSat, with a lift-off mass of 1515 kg, was **launched by** the Indian launch vehicle **PSLV** from Satish Dhawan Space Centre, Sriharikota, **on September 28, 2015, into a 650 km orbit** inclined at an angle of 6 degrees to the equator.
- The spacecraft control centre at **Mission Operations Complex (MOX) of ISRO Telemetry, Tracking and Command Network (ISTRAC), Bengaluru, manages the satellite** during its entire mission life.
- The **minimum useful life** of the AstroSat mission **is around 5 years.**
- It carries a total of **five scientific payloads**, enabling **imaging and studying the** temporal and spectral properties **of galactic and extra-galactic cosmic sources** in a wide range of wavelengths on a common platform.
- **Scientific Objectives:**
 - To **understand high energy processes** in binary star systems containing neutron stars and black holes.

- Estimate **magnetic fields of neutron stars**.
- **Study star birth regions** and high energy processes in star systems lying beyond our galaxy.
- **Detect new**, briefly bright **X-ray sources** in the sky.
- Perform a **limited deep-field survey of the Universe** in the Ultraviolet region.

SCIENCE & TECHNOLOGY

Malawi battles outbreak of scabies that health experts link to climate crisis

Scabies

- Scabies is a **parasitic infestation caused by a mite** known as **Sarcoptes scabiei**.
- This **causes an itchy rash** to form **on the skin**.
- **Untreated**, these microscopic **mites can live on the skin for months**.
- They **reproduce on the surface of the skin and then burrow into it to lay eggs**.
- Scabies is **often found in the skin folds**. But scabies can appear on many parts of the body.
- **Transmission**: It is **contagious** and **can spread** quickly **from person-to-person through close skin contact** (e.g. living in the same residence) with an infested individual.
- **Symptoms**: Scabies symptoms include
 - **severe itch**, often worse at night;
 - **itchy lines** (linear burrows) **and bumps** (papules) on the fingers, wrists, arms, legs, and belt area;
 - **larger rash in infants and small children**, including on the palms, soles of the feet, ankles, and scalp.
 - A **more severe type of scabies, called crusted scabies, makes the skin crusty and scaly** and affects large areas of the body.
- **Treatment**: Scabies is **easily treated**. Medicated **skin creams or pills kill the mites** that cause scabies and their eggs. However, the **itching may not stop for many weeks after treatment**.

Scientists Have Discovered 'White Hydrogen' Beneath France. How It Can Help Save the Earth

White Hydrogen

- White hydrogen is also referred to as “**natural,**” “**gold**” or “**geologic**” **hydrogen.**
- It is naturally produced **in the Earth's crust** and is considered a potential source of clean energy.
- It generally exists combined with other molecules.
- White hydrogen has several advantages over other types of hydrogen
 - It **causes no CO2 emissions** when used as a fuel.
 - It is compatible with existing infrastructure and technologies for hydrogen production and utilisation.
 - It is **cheaper and more efficient** than steam reforming or electrolysis.
 - It is **abundant** and renewable.
- Its deposits have been found across the world, including in the **US, Eastern Europe, Russia, Australia, France, and other countries.**
- It is estimated that globally, there could be tens of billions of tonnes of white hydrogen.

Types of Hydrogen:

- **Grey Hydrogen:** It is produced **via coal or lignite gasification**(black or brown), or via a process called steam methane reformation (SMR) of natural gas or methane (grey). These tend to be mostly carbon-intensive processes.
- **Blue Hydrogen:** It is produced via natural gas or coal gasification combined with carbon capture storage (CCS) or carbon capture use (CCU) technologies to reduce carbon emissions.
- **Green Hydrogen:** It is produced **using electrolysis of water** with electricity generated by renewable energy.

BPCL, GAIL ink 15-year, ₹63000-cr propane supply pact

Propane

- It is a colourless, **easily liquefied, gaseous hydrocarbon**(compound of carbon and hydrogen).
- It is an alkane, which means it consists of **only single covalent bonds** between carbon and hydrogen atoms.
- It is the third member of the **paraffin series, following methane and ethane.**
- The chemical formula for propane is **C₃H₈.**
- **Source:**
 - It is a **byproduct of natural gas processing** and petroleum refining.
 - It is also produced during the **fractional distillation of crude oil.**
- It is commercially available as liquefied propane or as a major constituent of liquefied petroleum gas (LPG).
- It **has a high octane rating,** making it an excellent choice for spark-ignited internal combustion engines.
- **Application of Propane**

- Its main uses include home and water heating, cooking and refrigerating food, drying clothes, and powering farm and industrial equipment.
- The chemical industry also uses propane as a **raw material for making plastics and other compounds.**

The New Fuel that May Replace Diesel in Indian Railways' Locomotives, Save Rs 2,280 Crore

Methanol Diesel-15 Fuel

- It is a special fuel developed by the Indian Railways' Research Design and Standards Organisation (RDSO) in collaboration with the Indian Oil Corporation Ltd. (IOCL).
- It is a **cost-effective blended fuel containing 15% methanol, 71% mineral diesel**, and 14% indigenously developed additives by IOCL.

Benefits of MD-15

- It offers **superior performance, combustion, and emission characteristics** compared to regular mineral diesel fuel.
- It has the potential to reduce diesel consumption by 15% and result in substantial annual savings.
- It significantly **decreases harmful pollutant emissions**, contributing to a cleaner and greener environment.
- The NOx emissions were significantly lower, thus reducing the harmful pollutants which cause smog and pollution.

Methanol

- It is also called **methyl alcohol, wood alcohol, or wood spirit.**
- It is the simplest of a long series of organic compounds called alcohols, consisting of a methyl group (CH₃) linked with a hydroxy group (OH).
- It completely mixes with water.
- **Production**
- This fuel is generally produced by steam-reforming natural gas to create synthesis gas.
- Feeding this synthesis gas into a reactor with a catalyst produces methanol and water vapour.
- **Application:** Used to make **chemicals**, to **remove water from automotive and aviation fuels**, as a **solvent for paints and plastics** and as an ingredient in a wide variety of products.

NICED makes quick detection of drug-resistant H. pylori possible

Helicobacter pylori

- It is a common type of **bacteria** that **grows in the digestive tract** and tends to attack the stomach lining.
- It is adapted to live in the harsh, acidic environment of the stomach.
- This infection usually **happens during childhood**.
- Its infections are usually harmless, but they're **responsible for most ulcers** in the stomach and small intestine.
- This bacterium can change the environment around it and reduce the acidity, so it can survive more easily.
- The spiral shape of H. pylori allows it to **penetrate the stomach lining**, where it's protected by mucus and the body's immune cells can't reach it.
- Most people with H. pylori infections will never have any signs or symptoms.
- When signs or symptoms do occur with H. pylori infection, they are typically related to gastritis or a peptic ulcer and may include:
 - An ache or burning pain in your stomach (abdomen)
 - Stomach pain may be worse when your stomach is empty
 - Nausea, Loss of appetite, unintentional weight loss,

Treatment

- It typically involves a combination of antibiotics and a proton-pump inhibitor (a drug that reduces your stomach acid) for up to 14 days.
- This treatment is sometimes **referred to as triple therapy**.

Evidence found for the production of tellurium in neutron star mergers

Tellurium

- Tellurium is a **semi-metallic, lustrous, crystalline, brittle, silver-white element**.
- **Atomic Number: 52**
- It has the **properties of both metals and nonmetals**.****
- It **forms many compounds** corresponding to those of sulphur and selenium.
- **When burned in the air**, tellurium has a **greenish-blue flame** and **forms tellurium dioxide** as a result.
- Tellurium is a **semiconductor material** and is slightly **photosensitive**.
- It is **one of the only elements that readily combine with gold (Au)**.
- **Sources:**
 - Tellurium is **sometimes found free in nature**.
 - **More commonly**, it is **found combined with metals, such as** in the minerals **calaverite** (gold telluride, AuTe₂) and **sylvanite** (silver-gold telluride).
 - **Commercially**, tellurium is **obtained as a byproduct of electrolytic copper refining**.

- **Applications:**
- Tellurium is **alloyed with copper and stainless steel** to **make these metals more workable**.
- It is **added** at very low levels to **lead to decreases the corrosive action of sulfuric acid in batteries** and to **improve the lead's strength** and hardness.
- It is used as a **colouring agent in ceramics**.
- It is also used in the **electronics industry**, for example, **with cadmium and mercury to form photosensitive semiconductors**.
- It is **used in vulcanizing rubber, and in catalysts for petroleum cracking**, and in blasting caps for explosives.

Neutron Star

- A neutron star is an extremely dense and compact celestial object that **forms after the core of a massive star collapses under its own gravity during a supernova explosion**.

Japan: Scientists develop self-healing, stronger and partially biodegradable plastic

Vitrimer

- These represent a **relatively recent category of plastics** known for their impressive strength at low temperatures.
- They also possess the unique ability **to be reshaped numerous times when exposed** to higher temperatures.
- It is also partially biodegradable.
- Nonetheless, they do have a notable drawback - **extreme brittleness**, as they cannot be stretched far before breaking.
- To address this issue, researchers introduced a molecule called polyrotaxane into the plastic synthesis process, resulting in a novel plastic variant they've **dubbed VPR, an abbreviation for "vitrimer incorporated with polyrotaxane."**
- VPR is over five times as resistant to breaking as a typical epoxy resin vitrimer.
- At a high temperature of around 150 degrees Celsius, VPR starts to recombine, allowing the material to take on different forms.
- It also repairs itself 15 times as fast, can recover its original memorised shape twice as fast, and can be chemically recycled 10 times as fast as the typical vitrimer.
- It even **biodegrades safely in a marine environment**, which is new for this material.

Hyderabad-based researchers develop new eDNA sequencing method to assess biodiversity

Environmental DNA

- eDNA is **DNA shed by all organisms** into their surroundings through **natural processes** during their lifetime or after death.
- **Source:** It originates from **cellular material shed by organisms** (via the skin, excrement, etc.) into aquatic or terrestrial environments that can be sampled and monitored using new molecular methods.

Key points about the new method

- The **new non-invasive method** can assess the total biodiversity of any ecosystem by sequencing the DNA fragments found in environmental samples such as **water, soil, or air**.
- This method can detect **all kinds of organisms**, including viruses, bacteria, archaea, and eukaryotes such as fungi, plants, insects, birds, fish and other animals.
- This method requires just a few litres of water sample without any direct capture or counting of species.
- The researchers filter out eDNA from environmental samples, read their sequences, and thus identify the source of the eDNA.

Significance

- Such methodology is important for the early detection of invasive species as well as the detection of rare and cryptic species.
- eDNA can also reveal the **presence of human remains**
- The new method is **cheaper, faster, and highly scalable** to large freshwater and marine ecosystems, which can help in monitoring and conserving the rich biodiversity of our country.

Hike in soy production in Brazil linked to higher child cancer deaths

Acute Lymphoblastic Leukaemia (ALL)

- It is a type **of cancer of the blood and bone marrow—the** spongy tissue inside bones where blood cells are made.
- The word "acute" in acute lymphocytic leukaemia comes from the fact that the disease progresses **rapidly and creates immature blood cells** rather than mature ones.
- It is the most **common type** of cancer **in children**.
- **Symptoms:** Bleeding from the gums, Bone pain, Fever, Frequent infections, frequent or severe nosebleeds, etc.
- **Causes:**
- It occurs when a **bone marrow cell develops changes** (mutations) in its genetic material, or DNA.
- A cell's DNA contains the instructions that tell a cell what to do. Normally, the

DNA tells the cell to grow at a set rate and to die at a set time.

- In ALL, the **mutations tell the bone marrow** cell to continue growing and dividing.
- When this happens, blood cell production becomes out of control.
- The bone marrow produces immature cells that develop into leukemic white blood cells called lymphoblasts.
- These abnormal cells are unable to function properly, and they can build up and crowd out healthy cells.
- **It's not clear** what **causes the DNA mutations** that can lead to acute lymphocytic leukaemia.
- **Treatment:** It may include chemotherapy or targeted drugs that specifically kill cancer cells.

Govt to monitor agricultural news using AI, launches Krishi 24/7

Krishi 24/7

- It is **the first-ever AI-powered solution** for automated agricultural news monitoring and analysis, with **support from [Google.org](https://www.google.org)**.
- **Features**
- The tool **scans news** articles in multiple languages and **translates them into English**.
- It extracts essential information from news articles, such as headline, crop name, event type, date, location, severity, summary, and source link, ensuring that the ministry receives timely updates on relevant events published on the web.
- **Significance**
- It addresses the need for an efficient mechanism to **identify and manage agricultural news articles** of interest to aid timely decision-making.
- It will aid the Department of Agriculture and Farmers Welfare (DA&FW) to identify relevant news, generate timely alerts, and take prompt action to protect farmers' interests and promote sustainable agricultural growth through improved decision-making.

Artificial intelligence

- It is a wide-ranging **branch of computer science** concerned with building smart machines capable of performing tasks **that typically require human intelligence**.
- The goals of artificial intelligence include **computer-enhanced learning, reasoning, and perception**.
- AI is being used today across different industries, from finance to healthcare.

JNCASR researchers develop radiative cooling paint to cool building structures

Radiative Cooling Paint

- It is developed from a novel **MgO-PVDF polymer nanocomposite**.
- They used ultra-white and ultra-emissive magnesium oxide (MgO)-polyvinylidene fluoride (PVDF) nano-composite prepared from materials that are earth abundant, cheap, non-toxic and non-harmful.
- The optimized MgO-PVDF with a dielectric nanoparticles resulted in **large solar reflectance** of 96.3% and a record **high thermal emission** of 98.5% due to Mg—O bond vibrations, and other stretching/bonding vibrations from the polymer.
- The researchers developed polymer nanocomposite paint by using a simple solution-processed technique.
- By measuring the temperature of the paint using a thermocouple, **excellent cooling performance** was demonstrated under hot sunlight.
- The nanocomposite paint exhibited **water-resistant hydrophobic properties** and can be easily coated on pavers, wood sticks and so on with high uniformity and good adhesion.
- The surface temperature of a treated paver decreases by approximately 10°C under intense sunlight-- almost double of the reduction that conventional white paints give.
- This low-cost, solution-processed paint demonstrates significant cooling capabilities with a high solar reflectivity and infrared thermal emissivity.

Radiative cooling

- It is a **passive cooling technology** without any energy consumption, compared to conventional cooling technologies that require power sources and dump waste heat into the surroundings.

Working under the sun causes 1 in 3 deaths from non-melanoma skin cancer, say WHO and ILO

Highlights

- In 2019, approximately **6 billion people of working age** (15 years and older) were **exposed to solar ultraviolet radiation** while working outdoors, accounting for 28 per cent of all working-age people.
- In the same year, **nearly 19,000 people in 183 countries** died from non-melanoma skin cancer as a result of working outside in the sun. The majority (65 per cent) were men.
- Governments should establish, implement and enforce policies and regulations that protect outdoor workers from sun-induced skin cancer

Non-melanoma skin cancer

- It refers to a group of cancers that develop in the upper layers of the skin.
- The main types are **basal cell carcinoma** (BCC) and **squamous cell carcinoma** (SCC).
- The main cause is **ultraviolet light**, which comes from the sun and is used in sunbeds.
- It is **more common in older people**, but younger people can also get it.
- **Symptoms**
- The main symptom of non-melanoma skin cancer is **a growth or unusual patch on the skin**, but it's most common in areas exposed to the sun, such as head, face and ears neck and shoulders etc.
- **Treatment:** Surgery is the main treatment for non-melanoma skin cancer. Radiotherapy, targeted medicines, photodynamic therapy and chemotherapy are also sometimes used.

Scientists have discovered what may be the first 'vampire' virus

Vampire Viruses

- They are **pathogens** that **latch onto other viruses** in order to **replicate themselves**.
- They **emerge when a bacteriophage attaches to a** soil-based virus, utilising its "life" for independent survival.
- This viral relationship between two pathogens is **called a satellite and a helper**. The satellite is the infectious strand that relies on the helper for support through its life cycle.
- Satellites depend on both their **host organism and helper virus** to complete its life cycle.
- The satellite virus depends on the helper virus to build the protective shell that covers its genetic material, called a capsid or to help it replicate its DNA.
- Most satellite viruses contain a gene that allows them to integrate into the host cell's genetic material after they enter the cell.
- This enables the satellite to reproduce whenever a helper enters the cell from then on.
- The host cell also copies the satellite's DNA and its own when it divides.

Bacteriophage

- Bacteriophages (BPs) are **viruses that can infect and kill bacteria without any negative effect** on human or animal cells. They are comprised of a protein capsule around an RNA or DNA genome.
- For this reason, it is supposed that they can be used, alone or in combination with antibiotics, to treat bacterial infections.

The world's first gene therapy for sickle cell disease has been approved in Britain

Sickle Cell Disease

- It is an **inherited blood disorder**.
- It is **marked by flawed haemoglobin**.
- **Haemoglobin is the molecule in red blood cells (RBCs) that carries oxygen to the tissues** of the body.
- **People with this disease have atypical haemoglobin molecules called haemoglobin S, which can distort RBCs into a sickle, or crescent, shape.**
- Sickle cell disease **interferes with the delivery of oxygen** to the tissues.
- **How does it affect blood flow?**
 - **Normally, RBCs are disc-shaped and flexible enough to move easily through the blood vessels.**
 - **In sickle cell disease, RBCs become crescent or “sickle”-shaped** due to a genetic mutation.
 - **These sickled RBCs do not bend or move easily and can block blood flow** to the rest of the body.
- **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:**
 - A **bone marrow transplant** (stem cell transplant) **can cure** sickle cell disease.
 - However, **there are treatments that can help relieve symptoms**, lessen complications, and prolong life.
 - **Gene therapy is also being explored** as another potential cure. The **UK recently became the first country to approve gene therapy** treatment for sickle cell disease

Thalassemia

- It is an **inherited blood disorder caused when the body doesn't make enough haemoglobin**.
- When there isn't enough haemoglobin, the body's **RBCs don't function properly, and they last shorter periods** of time, **so there are fewer healthy RBCs** travelling in the bloodstream.
- **When there are not enough healthy RBCs, there is also not enough oxygen delivered to all the other cells of the body**, which may **cause a person to feel tired, weak, or short of breath. This is a condition called anaemia**.
- People with thalassemia may have mild or severe anaemia. **Severe anaemia**

can damage organs and lead to death.

- Thalassemia is a **treatable disorder** that can be well-managed with **blood transfusions and chelation therapy.**

Plants warn each other of danger, and now we can watch them

Green Leaf Volatiles

- It represents an important group of **plant volatiles.**
- They consist of **six carbon (C6) compounds, including alcohols, aldehydes, and esters,** and are released from almost every plant.
- The release of GLVs is caused by **mechanical damage or herbivory by fungal or bacterial infection.**
- These are implicated in a panoply of interactions; they have been reported to repel or **attract herbivores and their natural enemies.**
- Plants have two major defence mechanisms**, involving a chain of molecular reactions**.
- The reactions are triggered when a **plant is damaged and GLVs are released as by-products.** (By mounting a defence response, plants can make themselves less palatable or even indigestible to the insect attackers.)
- The molecular cascade is mediated by calcium, a common mediator of chemical and electrical signals found throughout biology.

Volatiles

- These are **elements or compounds** that change from **solid or liquid state into vapour at relatively low temperatures.**
- The most common volatiles are **carbon dioxide, nitrogen, ammonia, hydrogen, methane, sulphur dioxide, and water,** which are abundant in nature and necessary for living organisms.

What are fibre optic cables and how do they work?

Fibre Optic Cable

- Optical fibres are made of **thin, cylindrical strands of glass.**
- The diameter of a typical fibre is close to the diameter of human hair.
- These fibres **can carry information,** such as text, images, voices, videos, telephone calls, and anything that can be encoded as digital information, across large distances almost at the speed of light.
- They are **strong, light, and flexible,** and ideal to be buried underground, drawn underwater, or bent around a spool.

How do optical fibres work?

- These cables work basically on the principle of **total internal reflection.**

- The signals **encoded as electromagnetic waves** can be fed into one end of an optical fibre, and they will reflect and bounce many times between the glass walls as they traverse several kilometres bearing the information in the signals.
- A **fibre optic communication** system consists of three parts.
 - A **transmitter** encodes information into **optical signals** (in the form of rapidly blinking light pulses of zeros and ones).
 - An optical fibre carries the signal to its destination. There, a **receiver** reproduces the information from the encoded signal.
 - Optical waves allow a high data transmission rate of up to **several terabits per second in a single fibre**.
- Unlike radio or copper-cable communication, fibre cables are also insensitive to external perturbations such as lightning and bad weather.

How are these fibres developed?

- Nowadays, glass fibres are manufactured **using the fibre-drawing technique**.
- First, a thick glass rod, called a **preform**, of high purity and an engineered refractive index profile is prepared using **chemical vapour decomposition**.
- The preform is heated to about 1,600 degrees C until it melts and is then drawn into a thin, long fibre.
- The drawing process reduces the fibre's diameter while maintaining its length. The drawn fibre is coated with a protective layer to enhance strength and durability.

Applications

- Fibre optics technology has since been widely used in **telecommunication, medical science, laser technology, and sensing**.
- Optical fibres are an essential part of this development in communication.

China mysterious disease outbreak: What's mycoplasma pneumoniae, the bacteria that's going round with a virus

Mycoplasma Pneumonia

- It's a **type of bacteria** that acts more like a virus and spreads **faster from person to person**.
- It **infiltrates both sides of the lungs**, increasing cough and breathing difficulties. It damages the lining of the respiratory system (throat, lungs, windpipe).
- **Symptoms**
 - It is **not as rapidly infectious** as a virus but it can affect our throat and our nasal cavities and descend to the lungs very quickly, causing pneumonia.

- Signs include the **breakup of red blood cells, a skin rash and joint pain.**
- Children may report a stuffy or runny nose, sore throat, watery eyes, wheezing, vomiting, and diarrhoea.
- **Who is at risk?**
 - The bacteria can cause **pneumonia in any age group**, especially in children, elderly or those with weakened lungs.
 - Vulnerable groups, **who already have respiratory issues**, are prone to developing this infection in a severe form.
- **Treatment:** There are multiple antibiotics that effectively cure this infection.

SOCIETY

India-born author Nandini Das wins 2023 British Academy Book Prize

British Academy Book Prize

- This was formerly known as the **Nayef Al-Rodhan Prize.**
- It was established in 2013.
- It was established to reward and celebrate the best works of **non-fiction** that demonstrate rigour and originality and have contributed to public **understanding of other world cultures and their interactions.**
- The British Academy is the UK's national academy for humanities and social sciences.
- The eligible books come from the subjects that fall within those disciplines, from archaeology, history, and psychology to philosophy, languages, and cultural studies.
- **Nandini Das** who is a Professor in the English faculty at the University of Oxford, won the award for her book '**Courting India: England, Mughal India and the Origins of Empire**'
- The winner gets the £25,000 prize cash award, and each of the shortlisted works will receive £1,000 each.

Kozhikode, Gwalior added to UNESCO creative cities list

UNESCO's Creative Cities Network

- The UNESCO Creative Cities Network (UCCN) was created in 2004.
- To promote cooperation with and among cities that have identified creativity as a strategic factor for **sustainable urban development.**
- Almost 300 cities around the world currently make up this network.
- **Objective:** Placing creativity and cultural industries at the heart of their development plans at the local level and cooperating actively at the

international level.

- UNESCO designates the creative **cities in seven fields**: craft, folk art, media arts, film design, gastronomy, literature, and music.
- Every year, UNESCO seeks applications from various cities across the globe to put them under its UCCN project.
- The applications in India are routed through **the Ministry of Culture**.
- **Kozhikode** is a permanent venue for the annual Kerala Literature Festival and hosts several other book festivals.
- **Gwalior** has a rich and diverse musical heritage encompassing **classical Hindustani music, folk music, and devotional music**. The city also has some prestigious music institutes and hosts popular festivals.
- **Other Indian cities which are added to this network**
 - **Srinagar and Jaipur**: in the field of crafts and folk arts
 - **Mumbai**: Film category
 - **Chennai and Varanasi**: Music category
 - **Hyderabad**: Gastronomy category.

Demand, price for Jhabua's Kadaknath chicken firm up ahead of Madhya Pradesh polls

Kadaknath Chicken

- Kadaknath, a **native of Madhya Pradesh (MP)**, is **prominently found in the Jhabua district** of the state.
- It has black flesh and this chicken is also called black chicken or Kali Masi.
- It's not just the meat, but even the organs and bones of this chicken are black. The eggs of this chicken are black as well.
- It **received the Geographical Indication (GI) tag** in 2018.
- It is known for **its high iron content** and **much lower cholesterol** than other breeds. It has a high protein content and is considered ideal for muscle repair and building.
- Kadaknath chicken is often claimed to be beneficial for individuals with certain health conditions, such as asthma and respiratory issues.

Geographical Indication (GI) 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.
- In order to function as a GI, a **sign must identify a product as originating in a given place**.
- It is typically used for agricultural products, foodstuffs, wine and spirit drinks, handicrafts, and industrial products.
- GI Tag ensures that no one other than those registered as authorized users is allowed to use the popular product name.
- Geographical Indications are covered as a component of intellectual property rights (IPRs) under the Paris Convention for the Protection of Industrial

Property.

- At the international level, GI is **governed by the** World Trade Organisation's **(WTO's) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)**.
- **In India**, Geographical Indications registration is **administered by the Geographical Indications of Goods (Registration and Protection) Act, 1999**.
- This GI tag is ****valid for 10 years,**** following which it can be renewed.
- The first product in India to be accorded the GI tag **was Darjeeling tea** in the year 2004-05.

Seed preservation and storage among the Ao and Sümi Naga

Ao and Sümi Naga communities in Nagaland follow practices passed down through generations, preserving seeds from successful harvests for successive cycles.

Researchers visiting six villages in the state—the Ao Naga villages of Longmisa, Longkong and Wamaken and Sümi Naga villages of Shiyepu, Natha Old and Natha New—observed that traditional knowledge associated with seed storage and preservation has been orally passed from one generation to another and is a persistent characteristic in every aspect of cultivation.

Traditionally agrarian, the Ao and Sümi Naga communities practise jhum or shifting cultivation. Traditional jhum fields are of two kinds: in highlands, the soil is loosely condensed and glutinous, better suited for maize, taro, mustard crops, glutinous rice and long grain rice; and in lowlands, it is compact and more porous, suitable for beans, chili and leguminous crops.

A peek inside these granaries draws attention to an aeration tool (called tsükpongsemtsü in Ao) made of bamboo. Normally, three or four aeration tools are placed between threshed rice in the granaries, to ensure out-circulation of warm air that can be detrimental to the preservation of grains. The presence of sprouting rice stalks around this aeration tool is considered a symbol of abundance.

Ao Naga Community:

The Aos, a major Naga ethnic group in **Nagaland's Mokokchung District**, refer to themselves as Aoer, meaning **"those who came" from across the Dikhu River**. They were the first Nagas to **embrace Christianity**, incorporating Western education. The **Moatsü Festival** is observed in early May after sowing, and the **Tsüngremong Festival**, the community's largest, is celebrated right after the harvest.

Sumis

The Sümis are a major Naga ethnic group inhabiting the territories of Zünheboto District, parts of Niuland District and Kiphire District in the Northeast Indian state

of Nagaland.

They are recognised as a **Scheduled Tribe (STs)**. The ancestral religion of the Sūmis was the **worship of nature**. Sūmis are 99% Christians. Very few of them still practice animism. **Tūlüni (July 8)** is a festival of great significance for the Sūmis.

PM Modi To Visit Birsa Munda's Village In Jharkhand

Birsa Munda

- He was a **folk hero** and a **tribal freedom fighter** hailing from the **Munda tribe**.
- He **spearheaded an Indian tribal mass movement** that **arose in the Bihar and Jharkhand belts** in the **early 19th century** under British colonisation.
- Munda **rallied the tribals to fight against the forceful land grabbing carried out by the British government**, which would turn the tribals into bonded labourers and force them to abject poverty.
- He **influenced his people to realise the importance of owning their land** and asserting their rights over it.
- **As a reaction to the introduction of the Zamindari system**, or Permanent settlement in tribal areas, **Birsa Munda in 1894 declared "Ulgulan", or revolt, against the British and the Dikus** – the outsiders.
- He **created a faith called 'Birsait'**.
- **Known as 'Dharti Abba'** or the Earth Father, Birsa Munda **stressed the need for the tribals to study their own religion** and not forget their cultural roots.
- Birsa Munda **propagated the principles of Hindu religion**.
- He **died on June 9, 1900, at age 25**.
- **His struggle** against exploitation and discrimination against tribals **led to a big hit against the British government in the form of the Chotanagpur Tenancy Act** being passed in 1908. The **act restricted the passing on of land from the tribal people to non-tribals**.
- **In recognition of his impact** on the national movement, the **state of Jharkhand was created on his birth anniversary in 2000**.
- **November 15, the birth anniversary of Birsa Munda, was declared 'Janjatiya Gaurav Divas'** by the Central Government in 2021.

Centuries-old copper coins found buried in field in Goa

Portuguese coins

- The Portuguese people issued coins in **gold, copper and silver from Goa**.
- The gold coins were termed as '**Cruzado**' or '**Manoel**' and were issued in the same size, value and weight as the '**Pagodas**' or '**Hons**'.
- Another type of gold coin named 'Meio-manoel', and 'Meia-espera' and 'Espera' in silver were also issued.
- The gold 'Manoel' and the silver 'Espera' had the **Cross of the Order of Christ** on the obverse and the armillary sphere, the device of the King D. Manoel on the reverse side of the coin were found.
- The half pieces of these coins bore the **word 'MEA' surmounted by a crown** on one side of the coin and the armillary sphere on the flip side of the coin.
- The Governor of Goa suspended the issue of these coins in 1519.
- After this in 1549, gold and silver coins were reintroduced.
- During this period, the Portuguese had adopted the **Apostle St. Thomas** as their patron saint for India.
- Since then it had been decided to etch the **effigy of St. Thomas** on their Indian coins and to give the coins the name of St. Thome.
- The gold and the silver coins had a seated or standing figure of St. Thomas with the letters S and T on one side of the coin and the crowned arm of Portugal with the initials of the reigning monarch on the other side of the coin.
- Sometimes **small inscriptions** were also found in the coins.
- The gold coins of Portuguese were of the **value of 20, 10, 5 and 2 'Xerafirms'**.
- Two mints were opened at Bassein and Daman in 1611 for issuing **copper 'Buzaruccos'**.
- Later on 'tutenag' coins were issued from these mints.
- The copper 'Buzaruccos' had the coat-of-arms on one side of the coin and a sheaf of arrows on the flip side of the coin.

Demand for traditional Kashmiri fire pot 'Kangri' surges as winters approach

Kangri

- The Kangri, also known as **Kanger or Kangid**, is **earthenware filled with glowing embers** and **encased in pretty handmade wicker baskets**.
- It is a **portable and moving heater** that **Kashmiris keep in their pheran**, a long woollen cloak reaching down to the knees **worn by people during the frosty winters**.
- A **pot can hold** about 250 grams of **charcoal, and the fire, lasts for hours**, under a pheran.
- It **keeps people warm during the harsh winter months**, when temperatures can drop below minus 20 degrees.
- **How is it made?**

- It is known for its **outer shell made of willow wicker reeds that grow abundantly in the wetlands of north Kashmir's** Ganderbal district.
- These **reeds can reach eight feet in height** and are **harvested during autumn**, just before demand for the fire pots swells.
- These then **go through** a multi-layered **process of scraping and peeling** to get rid of the bark, **soaking, boiling, and drying** before they are ready to be **woven around a bowl-shaped clay pot**.
- The earthenware is **decorated with colourful threads, mirrorwork, and sequins** and is about six inches (150 mm) in diameter.

ART & CULTURE

Drones to track Chhath festival crowds at river banks in Patna

Chhath Festival

- It is a **Hindu Vedic festival celebrated** in the Indian Sub-Continent, **prominently in Bihar, Jharkhand, Uttar Pradesh**, some areas in **Madhya Pradesh** in India, and a **few regions of Nepal**.
- It is **dedicated to the Sun God** (Lord Surya) and **Chhathi Maiya** (another name for Goddess Usha and a known **sister to Lord Surya**).
- It is **celebrated twice a year** in the months of **Chaitra (March-April)** and **Kartika (October-November)**.
- **Rituals:**
 - Considered to be one of the most **eco-friendly religious festivals**, Chhath Puja **lasts for 4 days**.
 - **The rituals** surrounding Chhath Puja **are supposedly harsher** when compared to other Hindu festivals.
 - They **involve strict fasting (without water), taking a dip in rivers/water bodies, standing in water** and **offering prayers, facing the sun for a prolonged period**, and **offering 'prasad' to the Sun** during sunrise and sunset.
 - **Any food** prepared during the festival **will have no salt, onion, or garlic**.
 - In recent days, both men and women have been seen fasting during this festival, but the **main worshippers are mainly said to be women**. Those who fast are **known as parvatin**.

Keeping the intriguing Tamil Lambadi art of embroidery alive

Tamil Lambadi embroidery

- The Lambadi community has been practising the craft of Lambadi embroidery for a long time, which has served the purpose of **decorating their own attire and household items.**
- It has been an integral part of their identity, and the Lambadis have made constant efforts to maintain it.
- The intricate embroidery is done by Lambadi women on cotton and **silk fabrics, using colourful cotton threads.**
- The traditional embroidery designs are all geometrical patterns with **squares, rectangles, and circles.**
- They have also been influenced by the **local forests, birds, fruits, and flowers.**
- The elderly women of this tribal community **continue to wear the Petia,** their traditional five-piece dress which is **made with Mushru silk from Kutch.**

Lambadi community

- The Lambanis are also known as Banjaras, and most of them are found in **Telangana, Andhra Pradesh, Tamilnadu, and Karnataka.**
- This community settled across the country with different names, have permanently abandoned their nomadic lifestyle and settled in their settlements called Tandas.
- They **speak Gor Boli,** also called Lambadi which belongs to the **Indo-Aryan Group of Languages.** Lambadi has no script.

Circular temple dedicated to Maya serpent deity discovered in Mexico

Mayan Civilization

- The Maya 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.**
- The Maya were noted as well 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.

- The Maya were equally **skilled as weavers and potters** and cleared routes through jungles and swamps to foster extensive trade networks with distant peoples.
- The Maya **made paper from the inner bark of wild fig trees** and **wrote their hieroglyphs on books** made from this paper. Those **books are called codices**.
- Their **society consisted of many independent states**, each with a rural farming community and large urban sites built around ceremonial centres. It **started to decline around A.D. 900**.
- The Maya people never disappeared, neither at the time of the Classic period decline nor with the arrival of the Spanish conquerors and the subsequent Spanish colonisation of the Americas.
- The **Maya remain in contemporary Mesoamerican societies and maintain a distinctive set of traditions** and beliefs, **combined with more recent practices** such as the almost total adoption of Roman Catholicism.

Yucatan Peninsula

- The Yucatan Peninsula is **Mexico's southeastern projection, extending into the Atlantic Ocean**.
- It **separates the Gulf of Mexico to the north and west and the Caribbean Sea to the east**.

Mesoamerica

- It refers to a **geographical and cultural area** which **extends from central Mexico down through Central America**, including the territory, which is now made up of the countries of Guatemala, Belize, Honduras, and El Salvador.

Ancient Temple Caves Discovered In Ratnagiri

Elephanta Caves

- It is a specimen of **rock-cut art and architecture** from the **times of mediaeval India**.
- The Elephanta Caves are **located in Western India** on **Elephanta Island** (otherwise known as the Island of Gharapuri), about **7 km from Mumbai's** mainland shore.
- The rock-cut Elephanta Caves were **constructed in the mid-5th to 6th centuries AD**, and **most of them are dedicated to Lord Shiva**.
- There are **two groups of caves** on the site of the Elephanta Caves, the **first is a large group of five Hindu caves**, and the **second is a smaller group of two Buddhist caves**.
- The caves are **hewn from solid basalt rock**. Except for a few exceptions, **much of the artwork is defaced** and damaged.

- The caves are an expression of art, and a number of **important images are sculpted here**, which **include 'Trimurti'** or three-headed Shiva, **'Gangadhar'**, which is a manifestation of the river Ganga as she descends to the earth, and **'Ardhnareshwar'**, which is a representation of Shiva and Parvati in the same body.
- It is a **UNESCO World Heritage Site**.

Bhutan King begins three-day visit to Assam, offers prayer at Kamakhya Temple

Kamakhya Temple

- It is situated on **Nilachal Hill** and adjoining **the southern bank of the Brahmaputra** River in Guwahati, Assam.
- It is one of the most revered centres of **Tantric practises**.
- 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 shakti temples.
 - It is interesting to note that the superstructure of each of the above chambers exhibits different architectural features.
 - 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.
- **Ambubachi Melais** one of the major festivals of this temple. The festival is held every year to commemorate the yearly menstruation of Goddess Kamakhya

'3,000-year-old Iron Age' geoglyph circle discovered in Telangana

Geoglyph

- It is a **large design** or motif (generally **longer than 4 metres**) **produced on the ground** and **typically formed by** clastic rocks or similarly **durable elements of the landscape, such as stones, stone fragments, gravel, or**

earth.

- A geoglyph is **created by arranging or moving objects within a landscape.**
- There are **two types of geoglyphs**, namely **positive and negative geoglyphs.**
- **Positive geoglyph:** It is formed **by the arrangement and alignment of materials on the ground** in a manner **akin to petroforms** (which are simply outlines created using boulders).
- **Negative geoglyph:** It is formed **by removing part of the natural ground surface** to create differently coloured or textured ground in a manner **akin to petroglyphs.**
- There is **another variation** of a geoglyph **that involves seeding plants in a special design.** The design **usually takes years to see** since it **depends on the plants growing.** This type of geoglyph is **called an arbour glyph.**
- Another type of geoglyph often referred to as **'chalk giants'** are those **carved into hillsides, exposing the bedrock beneath.**
- **Geoglyphs in History:**
- From ancient times, the most widely known geoglyphs are the **Nazca Lines of Peru**, which have been a mystery to this day.
- Other geoglyphs from the past include the **Megaliths in the Urals**, the **Uffington White Horse**, the Long Man of Wilmington, and many others.

Features of the geoglyph unearthed from Telangana:

- **Etched on a low-lying granitoid hillock**, the geoglyph spans **5 metres in diameter** and has a **perfect circular shape.**
- Surrounding the circle is a **30-centimetre-wide rim**, and **within the circle are two triangles.**
- It is **dated to the Iron Age**, specifically **around 1000 BCE.**
- It is suggested that this circle **might have served as a model for megalithic communities in planning their circular burial sites.**

Nazca Lines

- The lines are a **group of massive geoglyphs in southern Peru's Nazca Desert.**
- Experts estimate that they were designed anywhere in the **period from 500 BCE to 500 CE.**
- **Some of the lines are straight, while others depict designs of animals and plants.**
- **All the lines** have a **combined length of more than 808 miles**, while they cover an area of around 19 square miles.
- An individual design has a width of between 0.2 and 0.7 miles.
- All the **designs were made by removing the top layer of soil.** The depth of a line is anywhere between four and six inches.
- **Some of the shapes are visible from a height** of as much as **1,500 feet.**
- **The preservation of the lines** over the years **can be attributed to the dry and windless climate** of the region.

FACTS FOR PRELIMS

Mob Searches For Jews On Israel Flight At Russia Airport, 60 Arrested

Republic of Dagestan

- **It is a province** of Russia, **within the Russian Federation**.
- It is **one of 22 republics** that are part **of Russia**.
- Dagestan, which translates as "land of the mountains", is **situated in the eastern part of the North Caucasus**.
- **Borders:**
 - Dagestan has **Georgia and Chechnya** to the west and **Azerbaijan** to the south.
 - To its **east is the Caspian Sea**.
- **Population:** About **3.2 million**.
- **Religion:** The **majority** of Dagestanis **are Sunni Muslims**.
- **Capital:**
 - The capital, **Makhachkala**, is **located on Dagestan's Caspian Sea coast**.
 - Makhachkala was **conquered by the Russian Imperial Army in the 19th century**. It **was a major pre-revolutionary trading port**.
- **Ethnicity:**
 - It is **Russia's most ethnically and linguistically varied region** and home to at least **40 different ethnicities**. More than **30 languages** are spoken here.
 - It is sometimes **known as the Mountain of Languages** or **Mountain of Nationalities**, with some national groups occupying no more than one or two villages.
 - The **Avars are the largest ethnicity**. They **form about a fifth of the**

- **population** in the province.
- After the Avars, there is a sizeable presence of **Dargins, Kumyks, and Lezgins**.
- **About 10 percent** of the population is ethnically Russian.
- For almost a decade **until 2017, Russian security forces were battling an armed insurgency conducted by an array of Islamist militant groups** in Dagestan, neighbouring Chechnya, and Ingushetia.
- In present times, **Dagestan is a conduit for major oil and gas pipelines going from the Caspian Sea to the Russian heartland**. Dagestan itself has oil and gas reserves.

In FSSAI index, nearly all major states slip on food safety compared to 2019

State Food Safety Index

- The Index is an annual assessment released by the Food Safety and Standards Authority of India (FSSAI).
- It was **started in 2018-19 to create** a competitive and positive change in the food safety ecosystem in the country.
- The index will help in providing **safe and nutritious food to our citizens**.
- This index is based on the performance of the State/ UT on **five significant parameters**, namely,
 - Human Resources and Institutional Data, Compliance, Food Testing, Infrastructure and Surveillance, Training and Capacity Building and Consumer Empowerment
 - In the 2023 index, a new parameter called **'Improvement in SFSI Rank'** was added.
- The Index is a dynamic quantitative and qualitative benchmarking model that provides an objective framework for evaluating food safety across all States/UTs.
- The States/UTs are classified into **3 categories, namely large states, small states, and UTs**, for evaluation and assessment.

Key findings of the report

- After adjusting for a new parameter included in the 2023 index, 15 out of 20 states recorded lower 2023 scores compared to 2019.
- The steepest fall in scores over five years was seen in Maharashtra, Bihar, Gujarat,
- The worst drop has been recorded in the **'Food Testing Infrastructure' parameter**.
- States including Maharashtra, Bihar, Andhra Pradesh, and Chhattisgarh all recorded lower scores for this parameter.
- Gujarat, Madhya Pradesh, and Jharkhand, meanwhile, recorded lower scores **for the 'Compliance' parameter**.
- The **'Human Resources and Institutional Data'** parameter, was given the

third highest weightage of 18 per cent in 2023 (20 per cent in previous years).

- The only parameter that **recorded significant improvement** was **‘Training and Capacity Building’**, which was given the least weightage of 8 per cent in 2023 (10 per cent in previous years).

Imperial College London launches ‘biggest ever’ scholarship programme for Indians

Future Leaders Scholarship Programme

- The scholarship programme will support **30 of the country’s most talented Master’s scholars** over the next three years.
- The scholarship will cover the full cost of tuition and living expenses.
- It will be for students studying Master's programmes in **engineering, natural sciences, business, and medical research**.
- In this programme, half of the scholarships are reserved for female scholars.
- It will build a pathway for the most talented students in India to deepen their studies and expand their experiences at one of the world's top universities.
- Alongside the new scholarship programme, the university also signed a new partnership with the UK government's **Chevening Scholarships programme**.
- It will provide funding for an additional three Master's scholars from India over the next three years.

NMC to launch ‘one nation, one registration platform’ for doctors

One Nation, One Registration Platform

- The NMC will unveil a patch pilot of the **National Medical Register (NMR)** in the next six months, where doctors will be allotted a **unique identification number**.
- Doctors can also apply for their licence to work in any State depending on where they are.
- The commission had earlier this year issued a gazette notification titled “Registration of Medical Practitioners and Licence to Practice Medicine Regulations, ”
- The idea is to **provide a masked ID to undergraduate students** on the NMR, and depending on when they complete their course, the ID will be unmasked and allotted.
- This ID **can be used to update any further qualifications**, and all State registers for licences to work in any part of the country will be linked here.
- Aim: **To eliminate duplication and** red tape and allow the public to access information on any physician working in India.

National Medical Commission

- It has been constituted by an act of Parliament known as the **National Medical Commission Act, 2019**.
- It has replaced the Medical Council of India (MCI), which was constituted under the Indian Medical Council Act, 1956.
- **Functions:**
 - It **regulates medical education and medical professionals**.
 - It grants recognition of medical qualifications, gives accreditation to medical schools, grants registration to medical practitioners, monitors medical practice, and assesses the medical infrastructure in India.
- **Organisational structure**
 - It consists of **33 members**, including the Chairman (medical professionals only), 10 ex-officio members and 22 part-time members.
 - **Medical Advisory Council:** It provides the platform through which the states or UTs can put forth their views and concerns before the NMC and advises the NMC on measures to determine and maintain minimum standards of medical education.
- **Headquarters:** New Delhi

Kaleshwaram lift irrigation project sparks slugfest in poll-bound Telangana

Kaleshwaram Lift Irrigation project

- Location: KLIP is a **multipurpose irrigation project on the Godavari River**, e., at Kaleshwaram village **in Telangana**.
- The **Pranhita-Godavari River confluence** is the location of KLIP.
- The **Wardha, Painganga, and Wainganga rivers**, which together make up the seventh-largest drainage basin on the subcontinent, **come together at the confluence of the Pranhita River**.
- It is claimed to be the **world's largest multi-stage and multi-purpose lift irrigation project**.
- It was previously known as the Pranhita-Chevella Lift Irrigation Project.
- A key feature of the KLIP is a **series of underground and surface water pumping stations**, which are said to be the **world's largest such structures**.
- **Stretching over 300 km**, the lift irrigation system **raises large volumes of water from river or reservoir sources to be redistributed in channels and/or further reservoirs before pumping to the next stations**.
- The project is **aimed at supplying water to 45 lakh acres in Telangana**.
- **Started in 2016**, the project will utilise around 283 TMC of water from the river Godavari and **provide irrigation and drinking water to 13 districts of Telangana**.

ECI designed in-house software for complete Candidate and election management through 'ENCORE'

ENCORE software

- This ENCORE software stands for **Enabling Communications On Real-Time Environment**.
- This provides a seamless facility for **Returning Officers** to process **candidate nominations, affidavits, Voter turnout, counting, results**, and data management.
- The **ENCORE counting application** is an end-to-end application for returning officers to digitize the **votes polled, tabulate the round-wise data** and then take out various statutory reports of counting.
- Another application called the **ENCORE Scrutiny Application** allows Returning Officers to do scrutiny of the nominations filed by the candidates online.
- After verification of the nomination the status is marked as Accepted, Rejected or Withdrawn helping the Returning Officer to prepare the final list of contesting candidates and assign the symbols.

Election Commission of India

- It is a permanent **constitutional body** responsible for organising **free and fair elections in India**.
- The Constitution grants the ECI the power of direction, superintendence, and control of elections to Parliament, state legislatures, the office of president of India, and the office of vice-president of India.
- **Functions**
- **Determining the Electoral Constituencies'** territorial areas throughout the country.
- **Preparing and periodically revising electoral rolls** and registering all eligible voters.
- Notifying the schedules and dates of elections and scrutinising nomination papers.
- **Granting recognition to the various political parties** and allocating them election symbols.
- The Commission also **has advisory jurisdiction** in the matter of post-election disqualification of sitting members of Parliament and State Legislatures.
- **Composition:** The commission consists of a **Chief Election Commissioner (CEC)** and two **Election Commissioners (ECs)**.
- Under **Article 324 (2)**, the President appoints the CEC and other ECs.
- The President makes the appointment on the advice of the Union Council of Ministers, headed by the Prime Minister.
- The Constitution does not prescribe any qualifications, academic or otherwise, for appointment to these offices.
- The tenure of office and the conditions of service of all the commissioners is determined by the President.
- The tenure of commissioners **is 6 years or up to the age of 65**, whichever is earlier.

- The CEC and the two other ECs have the same powers and emoluments, including salaries, which are the same as those of a Supreme Court judge.
- In 2023, the Supreme Court mandated that, until the Parliament provides by law, the Election Commissioners shall be appointed on the recommendation of a Selection Committee comprising the Prime Minister, the Leader of Opposition in Lok Sabha and the Chief Justice of India. In response to this, the Government of India has introduced the **Chief Election Commissioner and Other Election Commissioners (Appointment, Conditions of Service and Term of Office) Bill, 2023**. It provides that the CEC and ECs will be appointed by the President upon the recommendation of a Selection Committee. The Selection Committee will consist of the Prime Minister, a Union Cabinet Minister, and Leader of Opposition/leader of the largest opposition party in Lok Sabha. The Bill is still pending in the Rajya Sabha.

Iran-Backed Group Claims Attack On Israeli Site By Dead Sea

Dead Sea

- The Dead Sea, also called the **Salt Sea**, is a **salt lake bordering Jordan** to the east **and Israel** to the west.
- However, the **western shore's southern half belongs to Israel**, while the shore's **northern half is in the West Bank**, an **area claimed by both Israel and Palestine**.
- It lies to the **east of the Mediterranean Sea and south of the Sea of Galilee**.
- It **lies in the Jordan Rift Valley** and is **fed mainly by the Jordan River**, which enters the lake from the north.
- It **does not have an outlet**, and so it **loses its water** mainly **through evaporation**.
- Its surface and **shores are 427 metres below sea level, Earth's lowest elevation on land**.
- It is **306 m deep**, the **deepest hypersaline lake** in the world.
- With **2% salinity** (in 2011), it is also **one of the world's saltiest bodies of water**, though Lake Vanda in Antarctica (35%), Lake Assal (Djibouti) (34.8%), Lagoon Garabogazköl in the Caspian Sea (up to 35%), and some hypersaline ponds and lakes of the McMurdo Dry Valleys in Antarctica (such as Don Juan Pond (44%)) have reported higher salinities.
- It is **almost ten times saltier than** ordinary
- This salinity **makes for a harsh environment** in which **animals cannot flourish, hence its name**.
- It is **50 kilometres long** and **15 kilometres wide at its widest point**.
- The Dead Sea seawater has a **density of 1.240 kg/L**, which **makes**

swimming in its waters **similar to floating**.

Indian delegation led by Union MoS Bhagwant Khuba to leave for Netherlands to participate in 2nd World Local Production Forum

World Local Production Forum

- It is an initiative of the World **Health Organisation**.
- The first WLPF was organised virtually in 2021.
- **Aim:** Increasing access to medicines and other health technologies.
- This forum provides Member States and the global community with a regular platform to **shape strategies**, galvanize **collective action**, and foster partnerships on sustainable local production to improve **timely and equitable access to quality-assured health products**.
- **Secretariat:** The Local Production and Assistance (LPA) Unit at the WLPF.
- The **second WLPF aims**
- To provide a global platform to discuss key challenges in **promoting local production and technology transfer**.
- To explore opportunities and mechanisms to tackle the bottlenecks.
- To promote sustainable local production capacity to improve access to quality, safe and effective health products and technologies.

World Health Organisation

- It is a United Nations agency that connects nations, partners, and people to **promote health, keep the world safe** and serve the vulnerable.
- It provides **technical assistance to countries**, sets international health standards, and collects data on global health issues.
- It has played a leading role in several public health achievements, most notably the Eradication of smallpox, the near-eradication of polio, and the development of an Ebola
- The World Health Assembly, the agency's decision-making body, elects and advises an executive **board made up of 34 health specialists**.

Russia formally pulls out of Treaty on Conventional Armed Forces in Europe

Treaty of Conventional Armed Forces in Europe (CFE)

- **Negotiated during the final years of the Cold War** and **signed a year after the fall of the Berlin Wall**, **CFE placed limits on the deployment of military equipment** to maintain military balance between North Atlantic Treaty Organization (NATO) and the then-Warsaw Pact countries.
- Its purpose was **to stop Cold War rivals from building up forces that could be used in a swift assault**.
- **Twenty-two member states** of the two military alliances, **NATO and the**

Warsaw Pact came together in Paris on November 19, 1990, to sign the agreement.

- It finally **entered into force on November 9, 1992**. The **Warsaw Pact by this time had disintegrated**, and its **treaty obligations** were consequently **passed to the pact's successor states**.
- Specifically, the **Treaty required NATO and Warsaw Pact states to have in total no more than 40,000 battle tanks, 60,000 armoured combat vehicles, 40,000 pieces of artillery, 13,600 combat aircraft, and 4,000 attack helicopters on the whole territory of the respective alliances**.
- **To reach these targets**, the **CFE state parties destroyed** in subsequent years more than **50,000 weapons systems**.
- These steps were **supervised under a treaty compliance mechanism requiring information sharing and reciprocal inspections**.
- Moreover, the **scope of the treaty** was soon **widened to cover troop numbers**. The **1992 follow-up agreement** known as the **CFE-1A** arranged **limits on the level of military personnel**.
- Meeting at the Istanbul summit of the Organization for Security and Co-operation in Europe (OSCE), **CFE Treaty partners finally agreed, on 19 November 1999, on an updated and modified arrangement: the Adapted CFE Treaty**.
- A **major change was that limitations on conventional weapon systems were no longer aligned to two "blocs" but to the territorial borders of individual states**.
- **Russia suspended its participation in the treaty in 2007** and halted active participation in 2015.

Warsaw Pact

- The Warsaw Treaty Organisation (Warsaw Pact) was a **political and military alliance established on May 14, 1955, between the Soviet Union and several Eastern European countries**.
- The Soviet Union formed this alliance **as a counterbalance to the NATO**, a collective security alliance concluded between the United States, Canada and Western European nations in 1949.
- The **original signatories** to the Warsaw Treaty Organization were the **Soviet Union, Albania, Poland, Czechoslovakia, Hungary, Bulgaria, Romania, and the German Democratic Republic**.
- Although **the members** of the Warsaw Pact **pledged to defend each other if one or more of them came under attack, emphasized non-interference in the internal affairs** of its members, and supposedly **organized itself around collective decision-making**, the **Soviet Union ultimately controlled** most of the Pact's decisions.
- It was **officially disbanded in March and July of 1991 following the dissolution of the Soviet Union**.

National Education Day is celebrated in the honour of Maulana Abul Kalam Azad, independent India's first Education Minister

National Education Day

- It is celebrated **on November 11** every year (Since 2008) to **mark the birth anniversary of Maulana Abul Kalam Azad**, India's first education minister.
- **Significance:**
- The purpose of celebrating National Education Day is to **enlighten individuals about the importance of education** and its positive impact on the nation's development and well-being.
- National Education Day **2023 Theme: Embracing Innovation**

Maulana Abul Kalam Azad

- Maulana Abul Kalam Azad, born on November 11, 1888, was a scholar, educationist, freedom fighter, and senior leader of the Indian National Congress (INC).
- He became the **youngest person to serve as President of INC in 1923**, at the age of 35.
- He was one of the leading supporters of the non-violent civil disobedience movement that was led by Mahatma Gandhi.
- He was the first Education Minister of independent India. He served in the position from 1947 to 1958.
- He was instrumental in the establishment of premier educational institutions, **including the Indian Institutes of Technology (IITs) and the University Grants Commission (UGC).**
- He was posthumously awarded India's highest civilian honour, **Bharat Ratna, in 1992.**

'Hello Naariyal' call centre launched

Coconut Development Board

- It is a **statutory body** established by the Government of India.
- It was established for the **integrated development of coconut production** and utilisation in the country, with a focus on productivity increases and product diversification.
- The board came into existence on January 12, **1981.**
- It functions under the **administrative control** of the **Ministry of Agriculture and Farmers Welfare, Government of India.**
- **Headquarters:** Kochi in Kerala
 - It has regional offices in Bangalore in Karnataka, Chennai in Tamil Nadu, Guwahati in Assam, and Patna in Bihar.
- **Functions**
 - Adopting measures for the **development of the coconut industry.**

- Imparting **technical advice** to those engaged in coconut cultivation and industry.
- Providing **financial and other assistance** for the expansion of the area under coconut.
- Encouraging adoption of modern technologies for processing of coconut and its products.
- Adopting measures **to get incentive prices for coconut** and its products.
- Recommending measures for improving the marketing of coconut and its products.
- Recommending measures for regulating imports and exports of coconut and its products.
- **Fixing grades, specifications and standards** for coconut and its products.

Hello Naariyal

- It is a call centre in Kerala that functions from the **headquarters of the Board in Kochi**.
- The initiative will benefit coconut **growers and extend its services** to traditional coconut-growing States of Tamil Nadu, Andhra Pradesh and Karnataka through the respective unit offices of the Board.
- The services will be available **at block and gram panchayat levels** in respective districts for carrying out activities related to coconut cultivation, including coconut tree climbing, plant protection, harvesting, seed nut procurement, and nursery management.