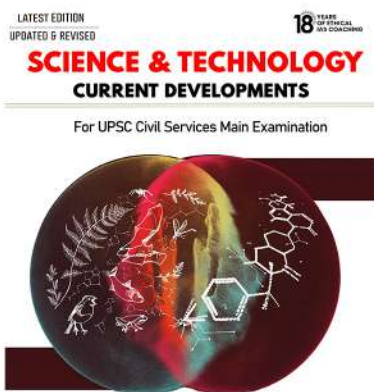
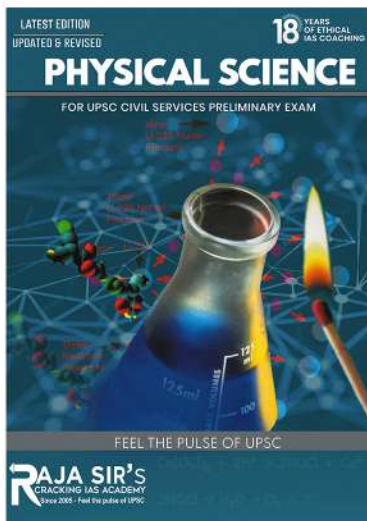
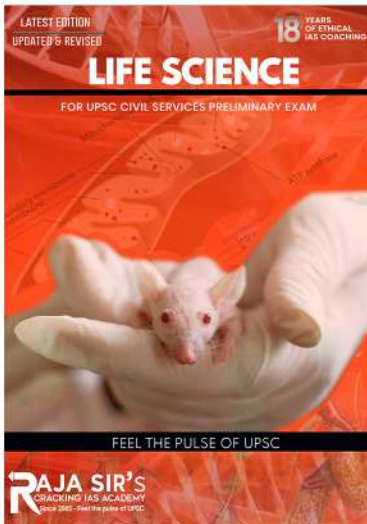


# IAS GOOGLE



GS- 3- MAINS SPECIAL

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## Cabinet approves third phase of the eCourts project

The eCourts Project was conceptualised on the basis of the “National Policy and Action Plan for Implementation of Information

## India To Be Included in JP Morgan's Emerging Markets Bond Index from June 2024

India's local bonds will be included in the Government Bond Index-Emerging Markets (GBI-EM) index of the JP Morgan.

## India's first AI school launched in Kerala

The establishment of this AI school is the result of a collaboration between iLearning Engines (ILE) USA and Vedhik eSchool. It caters to students from 8 to 12 grade with various multifaceted support services.

## New Indo-European Language Discovered in Ancient City of Hattusa

The Indo-European Languages are a family of related languages that today are widely spoken in the Americas, Europe, and also Western and Southern Asia.

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## POLITY

### Supreme Court Refers Sedition Law Challenge To Larger Bench, Says New Bill To Replace IPC Can't Affect Past Cases

#### Section 124A of the IPC

- Section 124A of the IPC **deals with sedition.**
- **History of Sedition Law:**
  - **Section 124A** was drafted by **Thomas Babington Macaulay** and included in the **IPC in 1870.**
  - The section was **first included to address the growth of Wahabi activity** between 1863 and 1870. The colonial authorities faced difficulty as a result of these actions.
  - **Indian nationalist leaders were involved in some of the most well-known sedition cases** of the late 19th and early 20th centuries.
  - **The earliest of these was Jogendra Chandra Bose's trial in 1891.** He served as the newspaper Bangobasi's editor. **He published a piece denouncing the Age of Consent Bill** for endangering the faith and its coercive treatment of Native Americans.
  - **In 1897, Bal Gangadhar Tilak's articles in Kesari were the subject of legal action.**
  - The other **well-known case included Mahatma Gandhi's 1922 sedition trial.** Sedition, according to Gandhi, is "the prince among the political sections of the IPC meant to destroy the freedom of the citizen."
  - **Post-Independence:**
    - After independence, the **term "sedition" was removed from the Constitution in 1948** after debate in the Constituent Assembly.
    - **Jawaharlal Nehru proposed the first amendment to the Constitution** in 1951, which **limited freedom under Article 19 (1) (a) and gave the state the authority to impose "reasonable restrictions"** on the right to free expression.
    - **Indira Gandhi's government made Section 124A a criminal offence** for the first time in Indian history. The **new Code of Criminal Procedure, 1973**, which came into effect in 1974 and **repealed the 1898 Colonial-Era Code of Criminal Procedure, made sedition a knowable crime.**
- **What does Section 124A state?**
- It states, "**Whoever, by words, either spoken or written, or by signs, or by visible representation, or otherwise, brings or attempts to bring into hatred or contempt, or excites or attempts to excite disaffection towards the Government established by law in India shall be punished with imprisonment for life, to which fine may be added, , or with imprisonment which may extend to three years, which fine may be added,**



or with fine."

- In simple words, this **means anyone who attempts to create hatred, contempt, or disaffection towards the government can be punished under the sedition law.**
- **Punishment:**
  - Sedition is a **non-bailable offence.**
  - Punishment under the law varies from **imprisonment for up to three years to a life term and fine.**
  - **A person charged** under this law **can't apply for a government job.** They **have to live without their passport and must present themselves in court as and when required.**

### Cabinet approves third phase of the eCourts project

#### *eCourts Project*

- The eCourts Project was **conceptualised on the basis of the "National Policy and Action Plan for Implementation of Information and Communication Technology (ICT) in the Indian Judiciary – 2005" submitted by eCommittee**, Supreme Court of India, with a vision to transform the Indian Judiciary by ICT enablement of Courts.
- **E-committee is a body constituted by the Government of India in pursuance of a proposal received from the Hon'ble the Chief Justice of India** to constitute an eCommittee to assist him in **formulating a National Policy on computerisation of the Indian Judiciary** and advise on technological communication and management-related changes.
- It is a **Pan-India Project, monitored and funded by the Department of Justice, Ministry of Law and Justice, Government of India for the District Courts across the country.**
- **The Project envisages:**
  - To provide efficient and **time-bound citizen-centric service delivery.**
  - To develop, **install and implement decision support systems in courts.**
  - To **automate the processes** to provide transparency in accessibility of information.
  - **To enhance judicial productivity, to make the justice delivery system affordable**, accessible, cost-effective, predictable, reliable and transparent.
- **The Phase I** of eCourts was concluded in 2015, in which **14,249 Court sites were computerised. Under Phase II, 18,735 District and Subordinate courts have been computerised** so far.

#### *Major Initiatives Launched under the Project:*

- Case Information Software (CIS) based on customised Free and Open-Source Software (FOSS) has been developed.
- National Judicial Data Grid (NJDG) is a flagship project launched in 2015 for monitoring the pendency and disposal of cases in HCs and Subordinate Courts.
- **Virtual Courts**(as of July 2022, there are 20 Virtual Courts in 16 States/UTs)

and using Video Conferencing.

- **An eFiling system** has been rolled out for the electronic filing of legal papers with advanced features like online submission of Vakalatnama, eSigning, online video recording of oath, etc.
- eSewa Kendras: To make justice delivery inclusive and to mitigate handicaps caused by digital divide, eSewa Kendras have been rolled out to provide e-filing services to lawyers and litigants.
- **National Service and Tracking of Electronic Processes (NSTEP)** has been developed for technology-enabled process serving and issuing of summons. It has currently been implemented in 28 HCs.
- **Secure, Scalable & Sugamya Website as a Service (S3WAAS) Website:** A new divyang- friendly website in 13 regional languages to enable them to access the information using assistive technologies.
- **IEC and Training:** As part of the IEC campaign, several initiatives have been taken to educate the Judicial Officers, lawyers and public about the facilities available.

*Phase III:*

- The Phase III of the **centrally sponsored project – to be implemented over four years – will see the digitisation of entire court records**, both legacy and pending cases, at an estimated **cost of ₹2,038.40 crore**.
- It seeks to spruce up the digital infrastructure of courts by **setting up 2500 new modern, virtual-friendly courts**, establishment of **1150 virtual courts**, and 4,400 eSewa kendras **in all court complexes**.
- Around 3,108 crore documents will be digitised as part of the project.

**Ministry of Skill Development recently launched the Skill India Digital (SID) platform.**

*Skill India Digital (SID) Platform*

- **SID serves as India's Digital Public Infrastructure (DPI) for the skill development**, education, employment and entrepreneurship ecosystem.
- SID Platform **aims to bring all skilling initiatives under a single umbrella** and provide skill development and entrepreneurial support to people.
- **Built by the National Skill Development Corporation (NSDC) in collaboration with multiple industry players**, the platform is **part of the World Bank-assisted Skill Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP) programme**.
- The platform **aligns with the vision articulated in the G20 framework** for building Digital Public Infrastructure (DPI) and the digital economy.
- **Features:**
  - More than **264 skilling courses from 42,623 centres** across the country will be **available on the platform**.
  - **The SID Platform application can be downloaded from the App Store and Google Play Store.**
  - It **supports multiple Indian languages** for inclusivity and **uses Aadhaar-based eKYC for secure access**.
  - It is committed to being user-friendly, with an **easy-to-use interface**

**adaptable to various devices** for accessibility.

- The **platform incorporates Aadhar-enabled facial recognition technology** as well as **artificial intelligence and machine learning algorithms to recommend customised courses** to students.
- The platform **also integrates government training programmes from both Central and State** governments, creating a unified hub for skill development initiatives.
- It has **introduced Digitally Verified Credentials (DVCs), a secure and tamper-proof way to showcase skills and qualifications**. Users **can confidently present their qualifications in a digital format** that is inherently authentic.
- Additionally, **SID offers Digital CVs through personalised QR Codes** for easy access to an individual's skills and experiences.

### **Supreme Court imposes cost on advocate-on-record for letting a young junior appear without papers**

*Advocate-on-Record (AoR)*

- The concept of AoR was **introduced by the SC with the power given to it under Article 145(1)** of the Indian Constitution, **which states that the SC may, from time to time, make rules** for regulating the practices and procedures in the court.
- **“Advocate on record” is a title given to an advocate who can represent a cause or pleading before the SC.**
- **Only these advocates are entitled to file any matter or document before the SC.** They can also file an appearance or act for a party in the SC.
- **No other High Court in India has a similar provision.**
- **Order IV Rule 5 of the Supreme Court Rules, 2013** lays down the requirements to be fulfilled to become an AoR. They are as follows:
  - The Advocate is required **to be enrolled with any State Bar Council.**
  - The Advocate is required to **have a prior experience of at least 4 years.**
  - The Advocate has **undergone a training of 1 year under a senior AoR.**
  - The Advocate has **appeared for the examination conducted by the SC.**
  - The Advocate is **required to have an office in Delhi within a radius of 10 miles from the SC house** and **give an undertaking to employ a clerk**, who shall be a registered clerk, within one month of being registered as an advocate on record.
- **Once registered, an AOR is issued a unique identification number** that must be **used on all documents filed in the SC.**

*Whether an Advocate is allowed to assist in a matter held before the SC?*

- An advocate is **allowed to assist, brief, collect all documents** related to the case **and help in the drafting as well.**
- **He can also argue and plead a case with the instructions of an AoR.**

- **Only the filing of a case under his Vakalatnama is restricted.**

### Supreme Court information a click away as it joins National Judicial Data Grid

#### *National Judicial Data Grid (NJDG) portal*

- The NJDG portal is a **national repository of data** relating to cases instituted, pending and disposed of by the courts across the length and breadth of the country.
- In this portal, one may access **case-related information, statistics such as institution, pendency, and disposal of cases**, case types, and year-wise break-up of the Supreme Court of India.
- It is a database of orders, judgements, and case details of 18,735 District & Subordinate Courts and High Courts created as an online **platform under the e-Courts Project**.
- It has been **developed by the National Informatics Centre (NIC)** in close coordination with the in-house software development team of the Computer Cell, Registry with an interactive interface and analytics dashboard.
- The entire database will be **periodically updated** on the NJDG portal.
- NJDG works as a monitoring tool to **identify, manage, & reduce the pendency of cases**.
- It helps to provide timely inputs for making policy decisions to reduce delays in disposing of cases and reduce case pendency.
- It also facilitates better monitoring of court performance and systemic bottlenecks and, thus, serves as an efficient resource management tool. To track cases related to land disputes.

#### *e-Courts Project*

- It was conceptualised on the basis of the “National Policy and Action Plan for **Implementation of Information and Communication Technology (ICT) in the Indian Judiciary – 2005**,” submitted by the e-Committee, Supreme Court of India.
- E-committee is a body **constituted by the Government of India** in pursuance of a proposal received from the Hon'ble Chief Justice of India to constitute an eCommittee to assist him in formulating a National Policy on computerisation of the Indian Judiciary and advise on technological communication and management-related changes.
- It is a Pan-India Project, **monitored and funded by the Department of Justice**, Ministry of Law and Justice, Government of India for the District Courts across the country.

### All reported births, deaths to be digitally registered from October 1

#### *Digital birth certificates*

- The **Registration of Births and Deaths (Amendment) Act, 2023** that paves way for digital birth certificates
- It will be a **single document** to be used for **admission to educational institutions**, applications for driving licences, government jobs, passports or Aadhaar, voter enrolment, and registration of marriage, among others.
- The centralised database will also **update the National Population Register**

(NPR), ration cards, property registration and electoral rolls.

- It will be **compulsory for States to register births and deaths** on the Centre's Civil Registration System (CRS) portal and share data with the Registrar General of India (RGI).

#### *National Population Register*

- It is a **register containing details of persons** usually residing in a village or rural area or town or ward or demarcated area within a ward in a town or urban area.
- It was first prepared in 2010 and updated in 2015 under Sub-rule (4) of Rule 3 of the Citizenship (Registration of Citizens and Issue of National Identity Cards) Rules, 2003, **framed under the Citizenship Act, 1955**.
- To incorporate the changes due to birth, death and migration, the NPR would be updated along with the House listing and Housing Operations of the forthcoming Census.
- The objective of the NPR is to **create a comprehensive database of usual residents** in the country.
- No document will be collected during this exercise.

### **'Don't want to 'court controversy': Chief Justice opts out of speaking on Basic Structure**

#### *Basic Structure Doctrine*

- In 1973, a **13-judge Constitution Bench of the Supreme Court (SC) ruled in Kesavananda Bharati State of Kerala that Article 368 of the Constitution does not enable Parliament to amend the basic framework of the document**.
- The historic ruling **came to be known as the "basic structure" doctrine** — a **judicial principle that the Constitution has certain basic features that cannot be altered** or destroyed by amendments **by Parliament**.
- **Over the years, various facets of the basic structure doctrine have evolved**, forming the **basis for judicial review of Constitutional amendments**.
- **How did it evolve?**
  - In **I.C. Golak Nath v. State of Punjab (1967)**, the **SC held that Parliament could not curtail fundamental rights** guaranteed under the Constitution.
  - The then **government enacted a series of constitutional amendments** following successive rulings against it.
  - The **24th Constitutional (Amendment) Act, 25th Constitutional (Amendment) Act, and 29th Constitutional (Amendment) Act gave Parliament uncontrolled power to alter** or even abolish **any fundamental right**.
  - The **Kesavananda Bharati case was the culmination of a conflict between the judiciary and the then-Indira Gandhi-led government**.
  - **Kesavananda Bharati vs State of Kerala (1973):**
    - The case is also known as the **Fundamental Rights Case**.
    - **In 1970, Kesavananda Bharti**, the head of a math in Kerala,

- challenged the Kerala Land Reforms Act** related to restrictions on the management of religious property.
- The case was **heard by the largest-ever Constitution Bench of 13 judges.**
  - It **upheld the validity of the 24th Constitutional Amendment Act (1971) and stated that Parliament is empowered to abridge** or take away any of the **Fundamental Rights.**
  - **As per 24th C.A.A., Constitutional Amendments were not considered laws under Article 13.** This amendment gave **unlimited power to the Parliament** to amend or repeal any part of the Constitution of India.
  - **However, the Court laid down a new doctrine of the 'basic structure'** (or 'basic features') of the Constitution.
  - **The SC in the Kesavananda Bharti case held that although Parliament has the power to amend any part of the Constitution, it could not use this power to alter or destroy its "basic structure.**
  - **The Court propounded** what has come to be known as **the "Basic Structure of the Constitution".**
  - Thus, this landmark judgment **meant that every provision of the Constitution could be amended**, but these amendments **could be subjected to judicial review to ascertain that the Basic Structure** of the Constitution remains intact.
- **The Parliament reacted** to this judicially innovated doctrine of 'basic structure' **by enacting the 42nd Amendment Act (1976).**
  - **This Act amended Article 368 and declared that there is no limitation on the constituent power of Parliament,** and no amendment can be questioned in any court on any ground, including that of the contravention of any of the Fundamental Rights.
  - **However, the SC in the Minerva Mills case(1980\*\*)** invalidated this provision as it excluded judicial review, which is a 'basic feature' of the Constitution.
  - **Again in the Waman Rao case (1981), the SC adhered to the doctrine of the 'basic structure'** and further **clarified that it would apply to constitutional amendments enacted after April 24, 1973.** It is the date of the judgement in the Kesavananda Bharati case.
- **Which features of the constitution constitute the Basic Structure?** The components of the Basic Structure provided in the constitution have been **recognized by the judiciary in various cases to date. Some of these components are**
    - **Supremacy of the Constitution**
    - **Sovereign, democratic and republican** nature of the Indian polity
    - **Separation of powers** between the legislature, the executive and the judiciary
    - **Judicial review**
    - Parliamentary system

- **Rule of law**
- **Principle of equality**
- **Free and fair elections**
- Independence of Judiciary
- **Limited power of Parliament to amend the Constitution**

### EU Parliament votes in favour of Critical Raw Materials Act

*Critical Raw Materials Act (CRM Act)*

- Critical raw materials (CRMs) **are raw materials of high economic importance for the EU, with a high risk of supply disruption** due to their concentration of sources and lack of good, affordable substitutes.
- The **CRM Act identifies a list of 30 critical raw materials**, including lithium, cobalt, nickel, rare earths, and magnesium.
- **Objectives of the Act:**
  - **Increase and diversify the EU's CRMs supply;**
  - **Strengthen circularity, including recycling;**
  - **Support research and innovation on resource efficiency and the development of substitutes;**
- **Setting benchmarks by 2030 for domestic capacities:** The Act sets these benchmarks **along the strategic raw materials value chain** and for the diversification of EU supplies
  - at least **10% of the EU's annual consumption for extraction;**
  - at least **40% of the EU's annual consumption for processing;**
  - at least **15% of the EU's annual consumption for recycling;**
  - **no more than 65% of the EU's annual consumption from a single third country;**
- The Act will **reduce the administrative burden**, streamlining permitting procedures **for critical raw materials projects in the EU.**
- To ensure supply chain resilience, the Act **creates CRMs for supply chain monitoring and stress-testing**, coordinates strategic stocks and **sets risk preparedness obligations on large companies producing strategic technologies.**
- In addition to a list of CRMs for the whole EU economy, **it lists strategic raw materials, which are those most crucial for strategic technologies** used for green, digital, defence and space applications.

### Union Minister Of Civil Aviation Launched An E-Wallet Payment Option On Bharatkosh Portal

*Bharatkosh portal*

- It is the initiative of the **Controller General of Accounts, Ministry of Finance**, Government of India.
- It provides one-stop services **to deposit any fees/fine/other money** into the government's account.
- It converges all the Civil Ministries/Departments of the Government of India.
- It aims to **provide 24X7 year-round electronic services** to deposit money

into Government account using internet-based payment technologies to the users at the door step through the web-based portal.

- It thus leverages the e-Governance commitment of the Government to provide e-efficient, e-effective, e-excellent government anywhere anytime.

*e-wallet facility work*

- The **e-wallet** will be particularly useful for processing of fees for various **regulatory approvals in the Bharat Kosh portal**.
- It acts as a prepaid wallet that would enable registered users to add funds in advance.
- Initially, **only NEFT/RTGS mode will be allowed for adding funds**. The users would also be able to generate receipt and challan instantly.
- The process will enable the generation of receipts and challans instantly, eliminating the problem of failed bank transactions.
- The facility will only be available to registered Bharatkosh users, wherein a unique wallet ID will be generated for each user to manage the wallet transactions.

### **Union Home Minister and Minister of Cooperation, inaugurates the newly constructed Integrated Check Post of Land Ports Authority of India (LPAI) in Araria, Bihar**

*Land Ports Authority of India*

- It is an authority constituted under the **Land Ports Authority Act, 2010**.
- It was constituted for the **development and management of facilities for cross-border movement** of passengers and goods at designated points along the international borders of India.
- **Mandate:** It is responsible for creating, upgrading, maintaining and managing border infrastructure in India. It manages several Integrated Check Posts (ICPs) all across the Borders of India.
- **Composition**
- Chairperson and Members are **appointed by Central Government**.
- **Tenure:** Both Chairperson and Members have tenure **for a period of five years** from the date on which he assumes office and till he attains the age of sixty years, whichever is earlier.
- **Functions:** It is mandated to **develop, sanitize and manage the facilities for cross border** movement of passengers and goods at designated points along the international borders of India.
- **Nodal ministry:** Ministry of Home Affairs.

### **Govt launches Kisan Rin Portal and weather WINDS manual**

- The manual provides stakeholders with an in-depth understanding of the WINDS portal's functionalities, data interpretation, and effective utilisation, empowering farmers, policymakers, and various agricultural entities to make well-informed choices.

*Weather Information Network Data Systems (WINDS) portal*

- It was **launched in July, 2023 by the Ministry of Agriculture and Farmers'**



- Welfare to leverage advanced weather data analytics to give stakeholders actionable insight to make informed weather decisions on agriculture.**
- **Crucial weather-related information and data will be available to the farmers** through WINDS.
  - The portal **also shares the ministry's parametric crop insurance scheme**, along with **non-scheme parametric insurance industry. programmes for crop risk mitigation and disaster risk reduction and mitigation** being run by the insurance industry.
  - The WINDS initiative is **laying emphasis on setting up a strong network of weather stations.**
  - Through this initiative, **the target is to establish a wide network of weather stations at the block and gram panchayat level.**
  - This extensive network of weather stations **will enable accurate monitoring of weather patterns, effective planning, risk assessment** and timely response to meteorological challenges.
  - The **goal is to bridge the gap in weather information availability and empower decision makers**, farmers and stakeholders **at the grassroots level.**

**Union Minister for Youth Affairs and Sports recently felicitated players under the Pandit Deendayal Upadhyay National Welfare Fund for Sportspersons (PDUNWFS) in New Delhi.**

*Pandit Deendayal Upadhyay National Welfare Fund for Sportspersons (PDUNWFS):*

- It was **set up in March, 1982** with a view to **assisting outstanding Sportspersons of yesteryear, living in indigent circumstances**, who had brought glory to the Country in sports.
- The scheme as **revised in May, 2016** to **provide for lump sum ex-gratia assistance** to outstanding Sportspersons of yesteryears.
- It **extends to the whole of India.**
- The scheme **promotes the welfare of the sportspersons generally** in order to **alleviate distress among them and their dependents.**
- The scheme **can be administered to active sportspersons individually or collectively as a group.**
- **Benefits:**
  - **Assistance to sportspersons living in indigent circumstances:**
    - A lumpsum ex-gratia financial assistance subject to a **maximum of Rs. 5 lakh.**
    - **Monthly pension of Rs. 5000/-** to those yesteryears meritorious sportspersons now living in indigent circumstances.
  - **Assistance for injuries sustained during training for and participation in Sports competitions:** A lumpsum ex-gratia financial assistance subject to a **maximum of Rs. 10 lakh.**
  - **Assistance to Families of deceased Outstanding Sportspersons:** A lumpsum ex- gratia **financial assistance, not exceeding Rs. 5.00 lakh in each case**, may be provided to the families of deceased outstanding sportspersons living in indigent circumstances.

- **Assistance for Medical Treatment:** Financial assistance not exceeding Rs. 10 lakh may be provided for medical treatment of an outstanding sportsperson or of any of his/her family members living in indigent circumstances.
- **Assistance to coaches, support personnel, umpires, referees and match officials:** Lumpsum financial assistance, not exceeding Rs. 2 lakh, may be provided to coaches and support personnel and to the family members of deceased support personnel who are living in indigent circumstances.
- **Eligibility:**
  - The applicant **must be a Serving or Retired Sportsperson** (including sports doctors, sports psychologists, sports mentors, physiotherapists, masseurs, coaches, support personnel, umpires, referees, and match officials).
  - The applicant **must have represented India at a National or International Level sports competition.**
  - The **Annual income of self/family** of the applicant (from all sources) **must be less than Rs. 4 LPA.**
  - The applicant **must qualify as one of the following.**
    - **Injured during the period of their training for competitions** and also during the competitions.
    - **Disabled as an after-effect of their strenuous training** or otherwise.
    - **Living in indigent circumstances.**
    - **Dependent of a deceased sportsperson.**

### The Digital Personal Data Protection Bill, 2023

- The DPDP Act is a legal framework introduced in India to safeguard the personal data of individuals and ensure that their data is shared only with their consent.
- It regulates the processing of digital personal data and outlines various provisions to protect individuals' privacy in the digital age.
- **Applicability:**
  - It applies to the processing of digital personal data within the territory of India, whether collected online or collected offline and later digitised.
  - It is also applicable to processing digital personal data outside the territory of India if it involves providing goods or services to the data principals within the territory of India.
- **Evolution:**
  - The conceptual basis of the DPDP Act is the report of the Expert Committee set up under the chairmanship of Justice BN Srikrishna, which led to the introduction of the Personal Data Protection Act in 2019.
  - After several iterations and consultations, the Digital Personal Data Protection Act, 2023, was introduced and subsequently passed by both the Lok Sabha and the Rajya Sabha.

- **Key Stakeholders:**
  - **Data Principal (DP): – the data owner.**
    - DPs could be **individuals or entities whose data is to be protected.**
    - The DP **has to give written consent to generate and process the data**, indicating the specific purpose of its use.
    - DP **can withdraw the consent at any time** or restrict its use.
  - **Data Fiduciary– A data collecting, storing, and sharing entity.**
    - A data fiduciary **also acts as a “Consent Manager,”who enables a DP to give, manage, review, and withdraw consent through an accessible, transparent, and interoperable platform.**
    - The **Central Government may notify any Data Fiduciary or class of Data Fiduciaries as significant Data Fiduciaries**, on the basis of an assessment of relevant factors when they turn out to be systemically significant.
  - **Data Processor–an entity processing the data on behalf of a data fiduciary. Both Data fiduciary and data processor could also be the same** in certain small entities.
  - **Data Protection Officer (DPO): – could be any individual appointed as DPO by a Data Fiduciary** under the provisions of this Act.
- **Other Provisions:**
  - **Citizen’s Rights:** Under data principal rights, individuals also have the **right to information, right to correction and erasure, right to grievance redressal, and right to nominate** any other person to exercise these rights in the event of the individual’s death or incapacity.
  - **Establishment of a Data Protection Board of India (DPBI):**
    - It will function as an **impartial adjudicatory body responsible for resolving privacy-related grievances and disputes** between relevant parties.
    - As an **independent regulator**, it will **possess the authority to ascertain instances of non-compliance with the Act’s provisions and impose penalties**
    - **The appointment of the chief executive and board members** of the Data Protection Board will be carried out **by the central government.**
    - **An appeal against any order** of the DPBI shall **lie with the High Court.** The **High Court could take up any breach Suo moto.**
    - **No civil court shall have the jurisdiction to entertain any suit** or take any action in respect of any matter **under the provisions of this Act** and **no injunction shall be granted by any court** or other authority **in respect of any action taken under the provisions of this Act.**
  - **Penalty for infringement:**

- The Act **does not impose criminal penalties** for non-compliance.
- **The financial penalty could range from as high as Rs. 250 crores to a data fiduciary or data processor to as low as Rs.10000 to a data principal** (the owner of data).
- **Conflict with existing laws:**
  - The provisions of the DPDP Act will be **in addition to and not supersede any other law currently in effect.**
  - **However, in case of any conflict** between a provision of this Act and a provision of any other law currently in effect, **the provision of this Act shall take precedence to the extent of such conflict.**

### **Union Minister of state for Agriculture and Farmers Welfare, Shri Kailash Choudhary Launches AI Chatbot for PM-KISAN Scheme today**

#### *AI Chatbot for PM-KISAN Scheme*

- It acts as a comprehensive guide for the beneficiaries, providing them with **timely and accurate responses** to their queries related to the scheme.
- This is **the first AI Chatbot integrated** with a major flagship scheme of the Union government.
- It has been developed and improved with the support **of the EKstep Foundation and Bhashini.**
- The introduction of the AI chatbot in the PM-KISAN grievance management system is aimed at empowering farmers with a user-friendly and accessible platform.
- In its first phase of development, the AI chatbot will assist farmers in seeking information related to their **application status, payment details, ineligibility status**, and other scheme-related updates.
- The AI Chatbot, **accessible through the PM KISAN mobile app**, is integrated with Bhashini, which offers multilingual support, catering to the linguistic and regional diversity of the PM KISAN beneficiaries.
- This integration of advanced technology will not only enhance transparency but will also empower farmers to make informed decisions.
- Currently, the Chatbot is available in **English, Hindi, Bengali, Odia, and Tamil.**

#### *PM-KISAN Scheme*

- It is a **central sector scheme** launched in February 2019 to support the **financial needs of land-holding farmers in India.**
- The scheme offers an annual **financial benefit of Rs 6,000/-** in three equal instalments to eligible farmers' families through Direct Benefit Transfer (DBT) mode.
- The government of India has also developed a mobile app with the feature of face authentication-based e-KYC.
- This app is the first mobile app that uses face **authentication-based e-KYC features** in any benefit scheme of the Government.

## Cancel free movement regime along border with Myanmar, demands Manipur CM N Biren Singh

### *Free Movement Regime*

- Under the FMR, **all the hill tribes, whether they are citizens of India or Myanmar, can travel within 16 km on either side of the Indo-Myanmar Border (IMB).**
- They **can cross the border by producing a border pass with a one-year validity** issued by the competent authority and **can stay up to two weeks per visit.**
- The FMR **was implemented in 2018 as part of the Central government's Act East policy.**
- FMR is **implemented by both governments for the people living along the IMB.**
- This **helps locals to get more culturally assimilated with trans-border villages** through weddings, celebrating common festivals together and trans-border trade.
- It is a **reflection of the physical, ethnic, linguistic, cultural and fraternal linkages** among the trans-border villagers.
- **Indo-Myanmar Border (IMB):**
  - It **runs for 1,643 km in the four states of Mizoram, Manipur, Nagaland, and Arunachal Pradesh.**
  - It **runs from the tripoint with China in the north to the tripoint with Bangladesh in the south.**
  - **Assam Rifles is tasked with guarding the IMB.**

## Madras HC quashes anti-smuggling Act case against practising lawyer, orders his release

### *COFEPOSA Act*

- It was passed by the Parliament on 13th December 1974, to **provide for preventive detention** in certain cases **for the purposes of conservation and augmentation of foreign exchange and prevention of smuggling activities** and for matters connected therewith.
- **Power to make orders detaining certain persons:** The **Central Government or the State Government** or any **joint secretary of central government and secretary of state government can order** the detention of a person (including a foreigner), **in case of-**
  - **Smuggling;**
  - **Abetting smuggling;**
  - **Transport, concealing, storing;**
  - **Harbouring persons involved in smuggling;**
  - **Dealing in smuggled goods;**
- **Any order by the State government** is to be **forwarded to the Central government within 10 days.**
- **Grounds for detention are to be communicated within 5 days to detenu.** Delay of up to 15 days is allowed if the reason is given in writing.

- The **detaining authority requires to satisfy the courts and also the detenu that he has acted in accordance with the laws** with due consideration.
- **High Courts can examine detention orders prior to execution. A detention order cannot be challenged at pre execution stage on the grounds of delay in execution.**
- The **order can be executed anywhere in India**, similar to arrest warrants under the Code of Criminal Procedure, 1973.
- **Advisory Boards:**
  - **Government should, within 5 weeks** of the date of detention, **make a reference to the Advisory Board.**
  - **Advisory Board to report within 11 weeks of the detention order. If satisfied, the detention period can be extended to one year.**
  - **If, in the opinion of the advisory board, there is insufficient cause for detention, the order is revoked, and the person is released.**

#### *Preventive Detention Laws in India*

- National Security Act (NSA), 1980
- Unlawful Activities (Prevention) Act (UAPA) of 1967
- Prevention of Illicit Traffic in Narcotic Drugs and Psychotropic Substances (PITNDPS) Act, 1988
- Prevention of Black Marketing and Maintenance of Supplies of Essential Commodities Act, 1980
- Maintenance of Internal Security Act (MISA)

#### **Centre to cancel OCI cards over pro-Khalistan activity**

##### *Overseas Citizen of India (OCI)*

- It is **given to overseas Indians.**
- OCI Scheme was **introduced by amending the Citizenship Act, 1955, in August 2005.**
- It **provides long-term visa-free travel and stay in India and gives the cardholders a host of privileges** normally not given to a foreign national.
- **Who is eligible for an OCI card?** As per the ministry's statement, a foreign national -
  - **who was a citizen of India at the time of, or at any time after 26 January, 1950;**
  - **who was eligible to become a citizen of India on 26th January, 1950;**
  - **who belonged to a territory that became part of India after 15th August, 1947; who is a child or a grandchild or a great-grandchild of such a citizen;**
  - **who is a minor child of such persons** mentioned above\*\*;\*\*
  - **who is a minor child and whose both parents are citizens of India or one of the parents is a citizen of India** - is eligible for registration as an OCI cardholder.
- **Entitlements:**

- A registered OCI is **granted multiple entry, multipurpose, life-long visa for visiting India.**
- He/she is **exempted from registration with the Foreign Regional Registration Officer or Foreign Registration Officer for any length of stay in India.**
- He/she is **entitled to general 'parity with Non-Resident Indians in respect of all facilities** available to them in economic, financial and educational fields **except in matters relating to the acquisition of agricultural or plantation properties.**
- **OCI cardholder is NOT entitled to:**
  - OCI is **not to be misconstrued as 'dual citizenship'**. OCI **does not confer political rights to vote;**
  - to be a **member of a Legislative Assembly or of a Legislative Council** or of the Parliament of India;
  - to **hold Indian constitutional posts such as that of the President, Vice President, Judge of the Supreme Court or High Court ;**
  - He/she cannot normally **hold employment in the Government;**
  - to **undertake any Missionary work, Mountaineering and Journalism work without prior permission of the Govt. of India;**
  - OCI **cardholder shall also require Protected Area Permit (PAP)/Restricted Area Permit (RAP)** to visit any place which falls within the Protected/Restricted Area notified by the Government as in the case of any other foreigner.
- **Renunciation of OCI:**
  - If any overseas citizen of India of full age and capacity **makes in the prescribed manner a declaration renouncing his overseas citizenship of India**, the **declaration shall be registered by the Central Government**, and; upon such registration, that **person shall cease to be an overseas citizen of India.**
  - **Where a person ceases to be an overseas citizen of India, every minor child of that person** registered as an overseas citizen of India, **shall thereupon cease to be an overseas citizen of India.**

### **Govt extends export benefits under RoDTEP scheme by a year till June 2024**

*Remission of Duties or Taxes on Export Products (RoDTEP) scheme*

- It was introduced by the Government as a **duty remission scheme on exports and is being implemented from 1st January 2021.**
- It was **enforced to repeal and reduce taxes for exported products**, thereby **encouraging the conditions of exported** and increasing the amount of exports in the country.
- The scheme will be **administered by the Department of Revenue, Ministry of Finance.**
- **Tax reimbursement under RODTEP:**
  - The Scheme provides a mechanism for **reimbursement of taxes, duties and levies, which are currently not being refunded under any other mechanism** at the central, state and local level **but which**

- are incurred by the export entities in the process of manufacture and distribution of exported products.
- This **does not only include the direct cost incurred** by the exporter **but also the prior stage cumulative indirect taxes on goods.**
  - **It is a WTO-compliant scheme** and follows the global principle that taxes/duties should not be exported.
  - **RoDTEP replaced the Merchandise Export Incentive Schemes (MIES), in response to the US challenging the Indian export subsidies under the MEIS at the WTO.** When the WTO dispute panel ruled against India, RoDTEP was framed to ensure that India remains WTO-compliant, while also supporting low-volume exports of commodities from India.
  - **Eligibility:**
    - It is **applicable to all the sectors** involved in the export of goods **irrespective of their turnover, provided the country of manufacturing of the exported goods should be in India.**
    - Such an exporter may **either be the merchant or manufacturer exporter.** However, **such goods should have been directly exported by such a person.**
    - **Goods exported through e-commerce platforms are also eligible** under this scheme.
  - **Process of Refund:**
    - Rebate under the scheme is provided to eligible exporters **as a percentage of the freight on board (FOB) value of exports.**
    - Remission is **issued in the form of transferrable e-scrips** (type of certificates with some monetary value) **maintained in an electronic credit ledger by the CBIC** (Central Board of Indirect Taxes and Customs).
    - **e-scrips can be used for paying basic customs duty** on the import of goods or may be **transferred electronically to another party.**

#### *Freight on Board (FOB)*

- Freight on Board (FOB), also **referred to as Free on Board**, is an **international commercial law term** published by the International Chamber of Commerce (ICC).
- It **indicates the point at which the costs and risks of shipped goods shift from the seller to the buyer.**
- The **buyer is responsible if the goods are damaged or lost while in transit.**

### **Govt launches scheme for promoting R&D in Pharma-MedTech Sector**

#### *PRIP scheme*

- The objective of the scheme **is to transform Indian pharmaceuticals sector** from cost based to innovation-based growth by strengthening the research infrastructure in the country.
- **Aim:** To **promote industry-academia linkage** for R&D in priority areas and to inculcate the culture of quality research and nurture our pool of scientists.
- This will lead to sustained global competitive advantage and contribute to



quality employment generation in the country.

- **Time period:** Five years (2023-24 to 2027-28).
- **The scheme has two components-**
  - **Component A: Strengthening the research infrastructure** by establishment of 7 Centre of Excellence (CoEs) at National Institutes of Pharmaceutical Education and Research (NIPERs). -These CoEs would be set up in pre identified areas with a financial outlay of Rs 700 Crores.
  - **Component B:** Promoting research in pharmaceutical sector by encouraging research in **six priority areas** like New Chemical Entities, Complex generics including biosimilars, medical devices, stem cell therapy, orphan drugs, Anti-microbial resistance etc.,
  - Financial assistance will be provided **for the Industries, MSME, SME, Startups working with government institutes** and for both in- house and academic research.
  - The component has a **financial outlay of Rs.4250 Crores.**

### GJEPC appeals to industries to stop import of rough diamonds

*Gems and Jewellery Export Promotion Council (GJEPC)*

- It is an **apex body of the Gem and Jewellery industry in India, sponsored by the Ministry of Commerce & Industry, Government of India.**
- **Primary Function:**
  - It is primarily involved in **introducing Indian gem and jewellery products to the international market and promotes their exports.**
  - **To achieve this, the Council provides market information to its members** regarding foreign trade inquiries, trade and tariff regulations, rates of import duties, and information about Jewellery fairs and exhibitions.
- **Headquarters: Mumbai, Maharashtra**
- It has **regional offices across the country and with a strength of over 7,500 members.**
- **Other Functions:**
  - **Organising joint participation in international jewellery shows.**
  - **Inviting countries to explore areas of cooperation** in the supply of rough diamonds, coloured gemstones and sourcing of finished jewellery.
  - **Identifying potential partners and buyers in international markets** through buyer-seller meets.
  - **Executing the Kimberly Process Certification Scheme in the country, as the Nodal Agency** appointed by the Government of India.
  - **Taking up relevant export-related issues with the Government, Ministries, Regulatory Authorities and Agencies.**
  - **Undertaking image-building exercises through international advertisements, publications and audio-visuals**
  - **Running training institutes** that impart manufacturing skills,

technical and design excellence in six cities – Mumbai, Delhi, Surat, Jaipur, Varanasi and Udupi.

- **Setting up Jewellery Parks** across the country.

#### *Rough Diamonds*

- Rough Diamonds refer to diamonds which are still in their natural state after being removed from the belly of the earth.
- This is the stage before they are actually cut or polished in order to create the marvellous diamonds found in all of our unique jewellery.

#### *Kimberly Process (KP)*

- KP is a **multilateral trade regime established in 2003** with the goal of preventing the flow of conflict diamonds.
- The core of this regime is the **Kimberly Process Certification Scheme (KPCS)**, under which States implement safeguards on shipments of rough diamonds and certify them as “conflict-free”.
- KP defines conflict diamonds as: ‘rough diamonds used to finance wars against governments’ - around the world.
- The participants include all major rough diamond-producing, exporting and importing countries. The diamond industry, through the World Diamond Council, and civil society groups are also integral parts of the KP.

### **PM Modi to launch Sankalp Saptah, aims at elevating citizens' quality of life**

#### *Sankalp Saptah*

- It is linked to the effective implementation of the Aspirational Blocks Programme (ABP).
- To implement the ABP and prepare an effective block development strategy, “chintan shivirs (brainstorming sessions)” were organized at village and block levels across the country. The Sankalp Saptah is the culmination of these chintan shivirs.
- Sankalp Saptah will be observed in all 500 aspirational blocks.
- Each day in Sankalp Saptah will be dedicated to a specific development theme on which all aspirational blocks will work.
- The themes for the first six days are “Sampoorna Swasthya”, “Suposhit Parivar”, “Swachhta”, “Krishi”, “Shiksha”, and “Samridhi Diwas”.
- The last day of the week will be a celebration of the work conducted during the entire week, as “Sankalp Saptah – Samavesh Samaroh”.
- The inaugural programme will witness the participation of about 3,000 panchayat and block-level people's representatives and functionaries from across the country at the Bharat Mandapam.

#### *Aspirational Blocks Programme (ABP)*

- ABP was launched on January 7, 2023, on the lines of the Aspirational District Programme that was launched in 2018 and covers 112 districts across the country.
- Aim: Enhancing governance and improving the quality of life in 500 Aspirational Blocks spanning 329 districts across India.
- Over half of these blocks are in 6 states: Uttar Pradesh (68 blocks), Bihar

(61), Madhya Pradesh (42), Jharkhand (34), Odisha (29) and West Bengal (29).

- It will be **attained by converging existing schemes, defining outcomes, and monitoring them on a constant basis**, enabling holistic development in areas that require added assistance.

### **StartUps Intellectual Property Rights Protection" is aimed at promoting innovation and entrepreneurship, says Science & Technology Minister**

*Economic Advisory Council to the Prime Minister (EAC-PM)*

- It is an **independent body** constituted to **give advice on economic and related issues to the Government of India, specifically to the Prime Minister.**
- It was set up for the first time in September 2017 with a term of two years.
- **Terms of Reference:**
  - **Analyzing any issue**, economic or otherwise, **referred to it by the Prime Minister and advising him thereon, addressing issues of macroeconomic importance, and presenting views thereon to the Prime Minister.**
  - These **could be either suo-motu or on reference from the Prime Minister** or anyone else.
  - **Attending to any other task as may be desired by the Prime Minister** from time to time.
- **Composition:**
  - EAC-PM is **headed by a Chairperson and consists of eminent economists** as members.
  - It is supported in its functions by a **team of officials and administrators.**
  - There is **no fixed definition of the exact number of members and staff** of the **EAC-PM.**
  - It is **common for the Council to be reconstituted time and again** with different organizational structures headed by various economists who are of recognized international eminence.
  - **For administrative, logistic, planning, and budgeting purposes, the NITI Aayog serves as the nodal agency** for the EAC-PM.

*Patent*

- A patent is an **exclusive right granted for an invention, which is a product or a process** that provides, in general, a new way of doing something, or offers a **new technical solution to a problem.**
- **To get a patent, technical information** about the invention **must be disclosed to the public in a patent application.**
- In principle, the **patent owner has the exclusive right to prevent or stop others from commercially exploiting the patented invention.** In other words, patent protection means that the **invention cannot be commercially made, used, distributed, imported, or sold by others without the patent owner's consent.**
- **Patents are territorial rights.** In general, the exclusive rights are **only applicable in the country or region in which a patent has been filed** and

granted, in accordance with the law of that country or region.

- The protection is **granted for a limited period, generally 20 years** from the filing date of the application.

### Shri Dharmendra Pradhan launches CRIIO 4 GOOD modules

#### *CRIIO 4 GOOD Initiative*

- It is a new online life skills learning module.
- It consists of series of **8 cricket-based animation** films to promote gender parity, equip girls with life skills and encourage their participation in sports.
- Using the popularity and passion of cricket young audiences, ICC and UNICEF released these modules to inspire children and youth to adopt critical life skills and appreciate the importance of gender equality.
- The programme is in three languages: **English, Hindi and Gujarati.**
- The **themes of the eight modules are:** leadership, problem-solving, confidence, decision-making, negotiation, empathy, teamwork and goal setting and are visualized through state-of-the-art animation using cricketing examples.
- The programme was launched in association with the **International Cricket Council, UNICEF, and the Board of Control for Cricket in India.**

#### *UNICEF*

- UNICEF stands for the United Nations Children's Fund which was established in 1946.
- It is a specialised agency of the United Nations dedicated to **providing humanitarian and developmental assistance** to children and mothers in developing countries.
- The organisation operates in over 190 countries and territories around the world.
- It is working to ensure that every child has access to basic healthcare, education, nutrition, clean water, and protection from violence and exploitation.
- **Headquarter:** New York City, United States.

### Tripura becomes fourth state to introduce e-cabinet system, CM Saha says it will infuse dynamism

#### *e-Cabinet system*

- **E-Cabinet** is a powerful software portal for State Governments to conduct Cabinet meetings electronically and online mode.
- It is **developed by National Information Centre (NIC)**, Ministry of Electronics & IT (MeitY).
- Tripura has **become the fourth state**—and second in the Northeast—after Uttarakhand, Uttar Pradesh and Arunachal Pradesh, to **have introduced an e-cabinet system.**
- **Features**
  - It maximizes usage of technology **in meetings and reduces paper use.**
  - It automates workflow activities of meetings; before, during and after.

- It is designed for smart tablets, with rich UI and UX elements, for ease of use.
- Push & Pull mechanism built in portal ensures high security needed for Cabinet matters.
- Build institutional memory & knowledge repository, enabling quick search & retrieval.
- For virtual meetings eCabinet is integrated with Bharat VC solution of NIC.
- **Benefits/Impact of eCabinet**
  - Saves **huge resources of Paper**, fuel, and manpower
  - Online Data Update
  - Information for all leading to coordinated action
  - Better decision making, Quick retrieval of Decisions taken in meetings and review Action taken
  - Enables Virtual participation of Ministers

### Law Commission recommends retaining 18 years as age of consent under POCSO Act

#### *Protection of Children from Sexual Offences (Pocso) Act*

- It is the **first comprehensive law** in India dealing specifically with the **sexual abuse of children**, enacted in 2012.
- It is **administered by the Ministry of Women and Child Development (MoWCD)**.
- **Objective:** The Act was designed to **protect children aged less than 18 from sexual assault, sexual harassment, and pornography offences** and provide for the establishment of Special Courts for the trial of such offences and related matters and incidents.
- **Salient Features:**
  - **Gender-neutral law:** The POCSO Act establishes a gender-neutral tone for the legal framework available to child sexual abuse victims by **defining a child as “any person” under the age of 18.**
  - It **defines various types of sexual abuse**, such as penetrative and non-penetrative assault, as well as sexual harassment and pornography.
  - It **considers a sexual assault to be aggravated in certain circumstances**, such as **when the abused child is mentally ill or when the abuse is committed by someone in a position of trust or authority over the child**, such as a family member, etc.
  - **People who traffic children for sexual purposes are also punishable** under the provisions relating to abetment in the Act.
  - **The attempt to commit an offence under the Act has been made liable for punishment** for upto half the punishment prescribed for the commission of the offence.
  - **No time limit for reporting abuse:** A victim can report an offence at any time, even a number of years after the abuse has been committed.

- **Mandatory reporting:** The Act also makes it the **legal duty of a person aware of the offence to report sexual abuse. In case s/he fails to do so, the person can be punished** with six months imprisonment or a fine.
- **Safeguards to victims:** The Act incorporates child-friendly procedures for reporting, recording of evidence, investigation and trial of offences. These include:
  - **Recording the statement** of the child **at the residence of the child or at the place of his choice, preferably by a woman police officer** not below the rank of sub-inspector.
  - **No child is to be detained in the police station at night** for any reason.
  - **Police officers to not be in uniform** while recording the statement of the child.
  - **The statement of the child is to be recorded as spoken by the child.**
  - **Medical examination of the child is to be conducted in the presence of the parent of the child or any other person in whom the child has trust** or confidence.
  - **No aggressive questioning or character assassination** of the child in-camera trial of cases.
  - The Act specifically laid down that the **child victim should not see the accused at the time of testifying and that the trial be held in camera.**
  - It also **required that the Special Court complete the trial, as far as possible, within a period of one year** from the date of cognisance.

#### *Amendment to the Act*

- The Act was amended for the **first time in 2019** to **enhance the punishments for specific offences** in order to deter abusers and ensure a dignified childhood.
- This amendment **enhanced the punishment to include the death penalty for aggravated penetrative sexual assault** of the child.
- It **also provides for levy of fines and imprisonment of up to 20 years to curb child pornography.**

## ECONOMY

### Overnight index swap rates at 10-month high; government bond yields rise

#### *Overnight Index Swap*

- It is a **derivative instrument where returns under a fixed-rate asset are swapped** against a predetermined published index of a daily overnight reference rate for an agreed period of time.
- The primary purpose of an OIS is **to manage interest rate risk**, particularly

the risk associated with **fluctuations in the overnight lending rate.**

- An overnight index swap rate is **calculated each day.**
- This rate is based on the **average interest rate institutions** with loans based on the overnight rate have **paid for that day.**

#### *OIS work*

- These are instruments that **allow financial institutions to swap the interest rates** they are paying without having to refinance or change the terms of their existing loans.
- Typically, when two financial institutions **create an overnight index swap**, one of the institutions is swapping an overnight (floating) interest rate, and the other institution is swapping a fixed short-term interest rate.
- To get the swap rolling, both firms would agree to continue servicing their loans, but at the end of a specified time period, **whoever ends up paying less interest will make up the difference to the other firm.**

#### *Derivative*

- It refers to a **type of financial contract** whose value is dependent on an underlying asset, group of assets, or benchmark.
- Common derivatives include futures contracts, forwards, options, and swaps.

### **Nifty crosses 20,000-mark for first time; Sensex surges 528 points**

#### *Nifty*

- NIFTY is a **market index introduced by the National Stock Exchange (NSE).**
- It is a **blended word – National Stock Exchange and Fifty** coined by NSE.
- Nifty was **established in 1996** under the name CNX Nifty. Further, **in 2015, it was renamed Nifty 50.**
- NIFTY 50 is a **benchmark-based index and the flagship of NSE.**
- It **represents the performance of the 50 largest and most actively traded stocks listed on the NSE.**
- These 50 largest companies are **from different industrial sectors** and collectively **represent the Stock Market and Economic Trends of India.**
- It is **one of the two main stock market indices in India, the other being SENSEX**, a product of the Bombay Stock Exchange (BSE).

#### *Stock Index*

- A stock index is a **measurement of the changes that take place in the stock market.**
- It **measures price movement and market performance.**
- **To create an index, one has to group some stocks** from a list of stocks with similar characteristics.
- **This grouping of stocks can be based on the type of industry, total market capitalization, or size of the company.**
- **Calculation:**
  - **To calculate the value of the stock market index, one can use the values of the underlying group of stocks.**
  - **Any change in the value of the underlying stock also leads to a**

- **change in the stock index value.**
  - **If the price of most of the stocks rises, the index will again rise and vice-versa.**
- Thus, **an index is indicative of changes in the market.**
- It **reflects the overall market's investment sentiment and price movements.**

### **Cognizant liable to pay dividend distribution tax on buyback of shares worth Rs 19,000 crore: ITAT**

#### *Dividend Distribution Tax (DDT)*

- **It was a tax imposed** by the Indian government **on companies that distributed dividends to their shareholders.**
- It was introduced **to tax the dividend income received by shareholders indirectly through the company rather than taxing the dividend income at the individual level.**
- **Companies that pay dividends** to their shareholders **in India were required to pay the DDT.**
- **DDT has been repealed** and abolished by the Government for Indian corporations **under the Finance Act 2020.**
- **With this modification, Indian corporations are no longer obligated to pay DDT** on dividends paid to shareholders. **Instead, shareholders will be forced to pay tax on dividends based on their tax bracket.**
- For example, if a shareholder is in the 30% tax bracket, the dividend received will be subject to 30% tax.
- The **dividend income is taxed in the hands of the shareholders only if the dividend is distributed on or after 01-04-2020.**

#### *Dividend*

- A dividend is a **return given by a company to its shareholders out of the profits earned** by the company in a particular year.
- Dividends can be **issued in various forms, such as cash payment, stocks** or any other form.
- A company's dividend is **decided by its board of directors, and it requires the shareholders' approval.**
- It is **not obligatory for a company to pay dividends.** Many companies do not pay dividends and instead retain earnings to be invested back into the company.
- **Dividend Yield:**
  - It is a **measure of the annual dividend income an investor can expect to receive** from an investment in a particular stock.
  - It is **calculated by dividing the annual dividend per share by the stock's current market price.**
  - This percentage **helps investors assess the income potential of a stock.**

### **Govt launches Unified Portal for Agricultural Statistics to improve data**



## management in agriculture sector

### *Unified Portal for Agricultural Statistics*

- This innovative platform is designed to **streamline and enhance data management in the agricultural domain**
- It marks a significant step towards a more efficient and responsive agricultural policy framework.
- It is a crucial component of the **Digital Public Infrastructure for Agriculture**.
- It is an **initiative by the Department of Agriculture and Farmers' Welfare** to streamline data management in the agriculture sector.
- It aims to provide **real-time, standardised, and verified data on agricultural commodities**, facilitating data-driven decision-making for policymakers, researchers, and stakeholders.
- This initiative **aligns with** the principles of **e-governance**, bringing smartness, transparency, and agility to India's agriculture sector.
- **Key Features of the UPAg Portal**
  - **Data Standardization:** The portal **standardises data** on prices, production, area, yield, and trade, making it accessible in one location eliminating the need to compile data from multiple sources.
  - **Data Analysis:** The UPAg Portal will **perform advanced analytics, offering insights** such as **production trends, trade correlations, and consumption patterns**, aiding policymakers in making informed decisions.
  - **Granular Production Estimates:** The portal will generate **granular production estimates** with increased frequency, enhancing the government's ability to respond to agricultural crises swiftly.
  - **Commodity Profile Reports:** Commodity profile reports will be produced using algorithms, minimising subjectivity and providing users with comprehensive insights.
  - **Plug and Play:** Users will have the flexibility to use the portal's data to prepare their own reports, promoting data-driven decision-making.

## SFIO arrests chartered accountant for role during demonetisation

### *Serious Fraud Investigation Office (SFIO)*

- It is a **corporate fraud investigating agency set up by the Government of India**.
- It is a **multi-disciplinary organisation under the Ministry of Corporate Affairs**.
- It **consists of experts in the fields of accountancy, forensic auditing, law, information technology, investigation, company law, capital market and taxation**.
- **Objective:** For **detecting and prosecuting** or recommending for prosecution **white-collar crimes and frauds**.
- **History:** It was **set up in 2003 on the basis of recommendations of the Naresh Chandra Committee on corporate governance** in the backdrop of stock market scams, the failure of non-financial banking companies and the

phenomena of vanishing companies and plantation companies.

- **Investigation into the affairs of a company is assigned to SFIO**, where the Government is of the opinion that it is necessary to investigate the affairs of a company-
  - **On receipt of a report of the Registrar or inspector under section 208 of the Companies Act, 2013**
  - **On intimation of a special resolution passed by a company** that its affairs are required to be investigated
  - **In the public interest or on request from any department of the Central Government or a State Government**
- **Organisational Structure:**
  - SFIO is **headed by a Director as Head of Department** in the **rank of Joint Secretary** to the Government of India.
  - The Director is **assisted by Additional Directors, Joint Directors, Deputy Directors**, Senior Assistant Directors, Assistant Directors **Prosecutors, and other secretarial staff.**
- **Headquarters:** The headquarters of SFIO is in **New Delhi, with five Regional Offices in Mumbai, New Delhi, Chennai, Hyderabad and Kolkata.**

### Inflows in Gold ETF hit 16-month high at Rs 1,028 crore in August

*Gold exchange-traded funds*

- These are **commodity-based** exchange-traded funds **with an underlying asset as gold.**
- These are passive investment instruments that are based on gold prices and invest in gold bullion.
- Gold ETFs are units **representing physical gold**, which may be in **paper or dematerialised form.**
- One unit of this fund is equal to 1 gram of gold and is backed by physical gold of very high purity.
- They are **listed and traded** on the **National Stock Exchange of India (NSE) and Bombay Stock Exchange Ltd. (BSE).**
- There is complete transparency on the holdings of a Gold ETF due to its direct gold pricing.

*Exchange Traded Fund (ETF)*

- It is a **collection** of investments **such as equities or bonds.**
- It is a basket of securities that trades on an exchange just like a stock does.
- It can contain **all types of investments, including stocks, commodities, or bonds.**
- They have cheaper fees than other types of funds.
- These funds have much lower expenses as compared to physical gold investments.

### IRDAI plans committee to create Bima Sugam platform, to appoint project consultant

*Bima Sugam platform*

- It will enable individuals to buy **life, health, motor or property insurance** policies online.
- The platform will enable **easy access under a single roof** for insurance companies, agents, brokers, banks and even aggregators.
- The platform will act as **a centralised database** which will assist consumers with all insurance-related
- It will also pave the way for a speedy acceptance of new or sandbox products.
- Cyril Amarchand Mangaldas (CAM) has been appointed **as the legal counsel** for the project.
- The responsibilities of CAM will include incorporation of **Section 8 not-for-profit company**, which will be the **company owning the Bima Sugam platform**.
- The platform will support all **personal and commercial/business insurance requirements** and support in identifying and comparing optimal products to meet user requirements within stipulated timelines.
- The entire spectrum of insurance offerings through the platform **will include life insurance and all its variants** — term plans, savings (Par and Non-Par), annuities, pension plans, etc.
- The platform will have to demonstrate an end-to-end digital onboarding journey for all insurance products without any manual interventions.

### Piyush Goyal lauds GeM crossing Gross Merchandise Value of ₹2 lakh crore in 2022-23

#### SHREYAS scheme

- The **Scholarships for Higher Education for Young Achievers Scheme-SHREYAS** comprises four central sector sub-schemes.
- All these sub-schemes are **central sector schemes**.
- **Free Coaching Scheme for SCs and OBCs:**
  - The objective of the Scheme is to **provide coaching of good quality** for economically disadvantaged Scheduled Castes (SCs) and Other Backward Classes (OBCs) candidates to enable them to appear in competitive and entrance examinations for obtaining appropriate jobs in Public/Private Sector as well as for securing admission in reputed technical and professional higher education institutions.
  - The ceiling of the total **family income** under the scheme is **8 lakhs per annum**.
  - The ratio of SC: OBC students is 70:30, and 30% of slots are reserved for females in each category.
  - In case of the non-availability of an adequate number of candidates in the SC category, the Ministry can relax this ratio.
  - However, in no case, a less than 50% SC student shall be permitted.
- **Top-Class Education for SCs:**
  - The Scheme aims at **recognising and promoting quality education** amongst students belonging to SCs by providing full financial support.
  - The Scheme will cover **SC students pursuing studies beyond the**

**12th class.**

- The scholarship, once awarded, will continue till the completion of the course, subject to satisfactory performance of the student.
- The ceiling of the total family income under the scheme is **8 lakhs per annum**.
- Presently, 266 higher education institutes, which include Government institutes and private institutes such as all the IIMs, IITs, NITs, IIITs and AIIMS, are covered.
- Under the scheme, full tuition fees, non-refundable charges and academic allowance expenses are provided.
- **National Overseas Scheme for SCs:**
  - Under this scheme, **financial assistance is provided** to the selected students from SCs, **De-notified, Nomadic and Semi-Nomadic Tribes**, landless agricultural labourers and traditional artisan categories for **pursuing masters and Ph.D. level courses abroad**.
  - Such students can benefit under the scheme whose **total family income**, including the candidate, is less than **8 lakhs per annum**, who have more than 60% marks in the qualifying examination, who are **below 35 years of age** and who secured admission in **top 500 QS ranking foreign Institutes/ Universities**.
  - Under the scheme, total tuition fees, maintenance and contingency allowance, visa fees, to and fro air passage,, are provided to the awardees.
- **National Fellowship for SC Students:**
  - Under the scheme, fellowship is provided to Scheduled Castes students for pursuing **higher education leading to M.Phil/PhD degrees** in Sciences, Humanities and Social Sciences in Indian Universities/Institutions/ Colleges recognised by the University Grants Commission (UGC).
  - The scheme provides for 2000 new slots per year who have qualified the National Eligibility Test- Junior Research Fellowship (NET-JRF) of UGC and Junior Research Fellows for Science stream qualifying UGC-Council of Scientific and Industrial Research (UGC-CSIR) Joint Test.

**RBI asks CICs to prepare data quality index for commercial, microfinance segments**

*Credit Information Companies (CICs)*

- CICs **collect public data, credit transactions, and payment histories of individuals and companies** regarding loans and credit cards, among others.
- Their primary function is to **gather data from various sources, such as banks, financial institutions, lenders, and other credit-granting entities, and then compile this data into credit reports**.
- **Banks, non-banking financial institutions refer to the CIC's report and score to decide borrowers' creditworthiness** before granting a loan or issuing a credit card.

- CICs in India are **\*\*licensed by the RBI and governed by the Credit Information Companies Regulation Act, 2005 (CICRA)\*\*** and various other rules and regulations issued by the RBI.
  - As per Section 15 of the CICRA, **every Credit Institution (like banks) should be a member of at least one CIC.**
  - CICRA also stipulates that a **CIC may seek and obtain information from its members only.**
- Thus, **if a bank seeks information** from a CIC, it **will get the information given by other institutions (to CIC) only.**
- **At present, four credit information companies are given certificates of registration** by the RBI. These companies are **Credit Information Bureau (India) Limited (CIBIL), Equifax Credit Information Services Private Limited, Experian Credit Information Company of India Private Limited and CRIF High Mark Credit Information Services Private Limited.**

*Credit Information Bureau (India) Limited (CIBIL)*

- It is the **leading credit bureau and CIC licensed by RBI.**
- **Primary Function:** To **collect and maintain financial data as provided by the lenders** to further **generate and provide credit reports** and credit scores for its customers.
- It maintains credit files on 600 million individuals and 32 million businesses.
- **CIBIL India is part of TransUnion, an American multinational group.** Hence, **credit scores are known in India as the CIBIL Transunion score.**
- **CIBIL score:**
  - It is a **three-digit numeric summary of your credit history.**
  - **Calculation:**
    - It is **derived using the credit history found in the CIBIL Report.**
    - It **takes into account borrowers' credit profile over the last 36 months.**
  - **Value:** The value of Credit Score may **range between 300 to 900.**
  - **Lenders can check the CIBIL report and CIBIL Score/CIBIL Rank to evaluate the risk of lending to applicants** and accordingly approve or reject new loan/credit card applications.
  - **The closer a CIBIL Score is to 900, the higher the chances of the consumer's credit card or loan application getting approved.**

**India To Be Included in JP Morgan's Emerging Markets Bond Index from June 2024**

- India's local bonds will be included in the Government Bond Index-Emerging Markets (GBI-EM) index of the JP Morgan.
- It is expected to reach the maximum weight of 10 per cent in the GBI-EM Global Diversified Index (GBI-EM GD).

*Emerging Markets Bond Index*

- It is a benchmark index for measuring the **total return performance of international government and corporate bonds** issued by emerging market

- countries that meet specific liquidity and structural requirements.
- Emerging market **bonds are debt instruments** issued by developing countries, which tend to **carry higher yields than government** or corporate bonds of developed countries.
  - Total 23 Indian Government Bonds (IGBs) with a combined notional value of \$330 billion are eligible.
  - All fall under the category of "**fully accessible**" for non-residents.

*Advantages of this inclusion*

- This move promises increased demand for the Indian rupee, potentially buffering against depreciation.
- Lower borrowing costs can fuel **essential infrastructure projects**.
- Increased liquidity may foster more efficient trading conditions.

**India Post Payments Bank accounts to be blocked if PAN card not updated?**

*India Post Payments Bank (IPPB)*

- IPPB has been **established under the Department of Posts**, Ministry of Communication, with **100% equity owned by the Government of India**.
- IPPB was **launched on September 1, 2018**, aimed at **making banking services available at people's doorstep**.
- **Mandate:** To remove barriers for the unbanked and under-banked and **reach the last mile, leveraging a network comprising 160,000 post offices** (145,000 in rural areas) and 400,000 postal employees.
- **Headquarters: New Delhi**
- **Functions:**
  - The operations of IPPB will be **on a smaller scale as compared to other banks** and **will not advance loans or issue credit cards to avoid risk**.
  - It will **accept deposits, offer remittance services, mobile payments/transfers/purchases** and other banking services like **ATM/debit cards, net banking and third-party fund transfers**.
  - It will **accept deposits upto Rs 2 lakh**, beyond which the account will be automatically converted into a post office savings account.
  - The products and services of the bank will be made available through various mediums such as **counter services, micro ATMs, mobile banking apps, messages, and interactive voice responses**.
  - The IPPB will **use Aadhaar to open accounts**, and a **QR card and biometrics will be used for authentication**, transactions, and payments.

*Payments Banks*

- A payments bank is like any other bank but **operates on a smaller scale without involving any credit risk**.
- It was set up on the **recommendations of the Nachiket Mor Committee**.
- **Objective:** Widen the spread of payment and **financial services to small businesses, low-income households**, and migrant labor workforce in a secured technology-driven environment.

- They are **registered under the Companies Act 2013** but are **governed by a host of legislations such as the Banking Regulation Act, 1949; RBI Act, 1934; Foreign Exchange Management Act, 1999, etc.**
- It needs to have a **minimum paid-up capital of Rs. 100,00,00,000.**
- **Activities that can be performed:**
  - It **can take deposits up to Rs. 2,00,000.** It can accept **demand deposits** in the form of savings and current accounts.
  - The **money received as deposits can be invested in secure government securities only** \*\*in the form of Statutory Liquidity Ratio (SLR). \*\*This **must amount to 75% of the demand deposit balance.**
  - The **remaining 25% is to be placed as time deposits with other scheduled commercial banks.**
  - It **can offer remittance services, mobile payments/transfers/purchases, and other banking services** like ATM/debit cards, net banking, and third-party fund transfers.
- **Activities that can be performed:**
  - It **cannot issue loans and credit cards.**
  - It **cannot accept time deposits or NRI deposits.**
  - It **cannot set up subsidiaries** to undertake non-banking financial activities.

### **Modified FCRA rules: NGOs to give details of assets created from foreign funds**

#### *Foreign Contribution Regulation Act (FCRA)*

- It is a law enacted by Parliament **to regulate foreign contributions (especially monetary donations) provided** by certain individuals or associations **to NGOs and others within India.**
- The Act, in its consolidating form, was **originally passed in 1976 and majorly modified in 2010.**
- The Act aims to **prevent foreign organisations from influencing electoral politics, social, political, economic, or religious discussions in India for wrong purposes and activities detrimental to the public interest.**
- The Act **falls under the purview of the Ministry of Home Affairs (MHA).**
- **'Foreign Contribution' means the donation, delivery or transfer made by any foreign source of any:**
  - **article** (not being an article given to a person as a gift for his/her personal use, the market value of which is not more than one lakh rupees);
  - **currency** (whether Indian or foreign);
  - **security.**
- **Contributions made by a citizen of India living in another country** (e.g. a Non-Resident Indian (NRI)) from his/her personal savings **through the normal banking channels, will not be treated as foreign contributions.**
- **Who can Receive Foreign Contributions? Any person can receive foreign contribution provided:**
  - The person **has a definite cultural, economic, educational,**

- **religious, or social programme;**
- The person **must have obtained FCRA registration/prior permission** from the Central Government and
- **Person includes**
  - an **individual;**
  - a **Hindu Undivided Family;**
  - an **association;**
  - a **company registered under Section 8 of the Companies Act, 2013;**
- The **foreign contribution received has to be utilised only for the purpose** for which it has been received, and **not more than 20% of the foreign contribution received** in a financial year **can be utilised to defray administrative expenses.**
- The **FCRA requires every person or NGO seeking to receive foreign donations to open a bank account for the receipt of foreign funds in the State Bank of India, Delhi.**
- **Registration under FCRA:**
  - It is **mandatory for all such NGOs to register themselves under the FCRA.**
  - The **applicant should not be fictitious or benami** and **should not have been prosecuted or convicted for indulging in** activities aimed at conversion through inducement or force, either directly or indirectly, from one religious faith to another.
  - The **registration is initially valid for five years**, and it can be **renewed subsequently if they comply with all norms.**
  - Registration **can be cancelled if an inquiry finds a false statement in the application.** Once the registration of an NGO is cancelled, **it is not eligible for re-registration for three years.**
  - The **ministry also has the power to suspend an NGO's registration for 180 days pending inquiry** and **can freeze its funds.**
  - **All orders of the government can be challenged in the High Court.**

### Social bonds explained as NABARD raises Rs 1,040 crore via its inaugural issue

#### *Social Bonds*

- Social bonds, also known as **social impact bonds and abbreviated as SIB**, are the type of bond where the bond issuer is **gathering funds for a project that has some socially beneficial implications.**
- These bonds are **designed to finance projects that address various social issues**, such as healthcare, education, affordable housing, poverty alleviation, and environmental sustainability.
- The **Pimpri Chinchwad Municipal Corporation (PCMC) in Maharashtra's Pune and United Nations Development Programme (UNDP) in 2020 co-created India's inaugural SIB.**
- **Features of Social Bonds issued by NABARD:**
  - This is the **first externally certified AAA-rated Indian**



- **Rupee-denominated SIB** in the country. The bonds have been **rated 'AAA' by CRISIL and ICRA.**
- The **base issue size of the social bonds was ₹1,000 crore**, with an **option to retain oversubscription up to ₹2,000 crore**, thereby aggregating up to Rs 3,000 crore.
- The **face value of each bond is ₹1 lakh.**
- **Maturity: 5 years**
- **Coupon Rate: 7.63 per cent.**
- **Sustainability Bond Framework:**
  - **NABARD recently announced a Sustainability Bond Framework**, which seeks to finance and **refinance new or existing eligible green and social projects.**
  - **Eligible social projects include affordable basic infrastructure, access to essential services**, affordable housing, employment generation, food security, socioeconomic advancement, and empowerment.
  - **Projects that promise energy efficiency, including green buildings, energy storage**, and smart grids, would also be eligible to **get funding through the new breed of bonds that NABARD is rolling out.**

#### *NABARD*

- **It is a financial institution** that was set up by the Indian government to **promote sustainable agriculture and rural development in the country.**
- It is the **main regulatory body in the country's rural banking system.**
- **Formation:**
  - It was **established in 1982** as a **central regulating body for agriculture financing and the rural section.**
  - The government of India established NABARD **under the outlines of the National Bank for Agriculture and Rural Development Act 1981.**
- **Objective: Promoting agriculture and rural development through participative financial and non-financial interventions**, innovations, technology and institutional development for securing prosperity.
- **Some of the activities undertaken by NABARD for rural development include:**
  - Provision of **refinance support**
  - **Improving rural infrastructure**
  - **Supervision of Regional Rural Banks (RRBs) and Cooperative Banks**
  - **Training artisans** to develop handicraft activities and offering them **help in marketing their produce**
  - **Preparation of credit plans at a district level** and encouraging banks to achieve these targets
  - **Development of sound banking practices** within the economically backward sections of India

## ENVIRONMENT

### Forest Department directs ESZ monitoring committee to take action against illegal cottages in Bandipur Tiger Reserve

*Bandipur Tiger Reserve (BTR)*

- **Location:**
  - It is situated in two contiguous **districts (Mysore and Chamarajanagar) of Karnataka** and located at the **tri-junction area of the States of Karnataka, Tamil Nadu and Kerala.**
  - Geographically, it is an **“ecological confluence” of the Western and Eastern Ghats.**
- **History:**
  - It was **once a hunting ground for the rulers of the neighbouring kingdom of Mysore.**
  - It was **established in 1931 as Venugopala Wildlife Park by the Maharaja of Mysore.**
  - It was **then expanded with the name Bandipur Tiger Reserve** under Project Tiger **in 1973.**
- It is **part of the larger Nilgiri Biosphere Reserve**, which is recognised as a UNESCO World Heritage Site.
- BTR is **surrounded by:**
  - **Nagarahole Tiger Reserve**(Tamil Nadu) in the North West (Kabini Reservoir separates the two).
  - **Mudumalai Tiger Reserve**(Tamil Nadu) in the South.
  - **Wayanad Wildlife Sanctuary**(Kerala) in the South West.
- Rivers: It is **surrounded by River Kabini in its north and River Moyar in its south.**
- **Climate:** Bandipur has a **typical tropical climate** with distinct wet and dry seasons.
- **Flora:**
  - It comprises diverse **vegetation ranging from dry deciduous to tropical mixed deciduous.**
  - It includes **rosewood, Indian kino tree, sandalwood**, Indian laurel, clumping bamboo, giant clumping bamboo etc.
- **Fauna:**
  - It is a shelter for the **largest population of wild Asian elephants in South Asia.**
  - It comprises **other mammals such as Bengal tiger, gaur, sloth bear, golden jackal**, dhole, four-horned antelope, etc.

### NGT tells M.P. govt. to stop motorised boats, cruise in wetlands

*Bhoj wetland*

- It consists of two contiguous **human-made reservoirs**, the upper and lower

- lakes, located in the city of Bhopal, **Madhya Pradesh**.
- The Upper lake is called **Bhojtal (Bada Talaab)** and the Lower Lake is known as **Chhota Talaab**.
  - The lakes are very rich in biodiversity, particularly **for macrophytes, phytoplankton and zooplankton**.
  - It has more than 15 kinds of fish and several vulnerable species, including turtles, amphibians and aquatic invertebrates.
  - It was designated as **the Ramsar** site in 2002.

#### *National Green Tribunal (NGT)*

- The National Green Tribunal has been established under the **National Green Tribunal Act 2010**.
- New Delhi is the Principal Place of Sitting of the Tribunal, and Bhopal, Pune, Kolkata and Chennai shall be the other four places of sitting of the Tribunal.
- NGT is mandated to make disposal of applications or appeals finally within 6 months of the filing of the same.
- **Composition**
  - It comprises **the Chairperson**, the Judicial Members, and the Expert Members.
  - They shall hold office for **a term of 5 years** and are not eligible for reappointment.
  - The Chairperson is appointed by the Central Government in consultation with the Chief Justice of India (CJI).
  - A Selection Committee shall be formed by the central government to appoint the Judicial Members and Expert Members.
  - There are to be at least 10 and a maximum of 20 full-time Judicial members and Expert Members in the tribunal.

#### *Ramsar Convention*

- This convention was signed on 2nd February 1971 to **preserve the ecological character** of their **wetlands of international importance**.
- It is named after **Ramsar, the Iranian city** where the treaty was signed in 1971, and places chosen for conservation under it are given the tag 'Ramsar site'.

### **Rise in global thunderstorm activity might increase the quantity of wispy cirrus clouds**

#### *Cirrus Clouds*

- They are **delicate, feathery clouds** that are **made mostly of ice crystals**.
- They are **thin and wispy in appearance**, often appearing as **delicate, high-altitude filaments or strands**.
- Their **wispy shape comes from wind currents, which twist and spread the ice crystals into strands**.
- They are **usually white or have a light grey colour**. In the **daytime, they are whiter than any other cloud** in the sky.
- They are **commonly known as "mare's tails"** because they are **shaped like the tail of a horse**.

- Typically **found at heights greater than 20,000 feet (6,000 metres)**, cirrus clouds are **composed of ice crystals that originate from the freezing of supercooled water droplets**.
- **They generally occur in fair weather and point in the direction of air movement** at their elevation.

*Other Main Cloud Types:*

- **Cumulus clouds:**
  - They are **puffy clouds that look like puffs of cotton with a distinct white or light grey appearance**.
  - They have a **relatively short life cycle**. They form, grow, and dissipate relatively quickly under stable atmospheric conditions.
  - **Cumulus clouds that do not get very tall are indicators of fair weather**. If they **do grow tall, they can turn into thunderstorms**.
  - The **bottom of cumulus clouds are fairly close to the ground**.
- **Stratus clouds:**
  - They are **low-level cloud formations** that are characterised by their **uniform and featureless appearance**.
  - They look like **flat sheets of clouds**.
  - They typically **cover the sky like a continuous, greyish or whitish blanket** and are **often associated with overcast or cloudy weather conditions**.
  - They **may stay in one place for several days**.
  - They **form at altitudes below 6,500 feet (2,000 metres) above sea level**.

*Thunderstorm*

- A thunderstorm is a weather phenomenon characterised by the **occurrence of lightning, thunder, heavy rain, and sometimes strong winds or hail**.
- It is a **type of storm that develops when warm, moist air rises rapidly in an unstable atmosphere**. It is the **result of convection**.
- **Thunderstorms can vary in intensity, size, and duration**, ranging from isolated, short-lived events to long-lasting, widespread systems.

### **265-million-year-old fossil belongs to oldest, largest South American predator before dinosaurs**

*Pampaphoneus biccai*

- It belongs to the early therapsid clade **called Dinocephalians**.
- It lived just before the largest extinction event in the history of Earth. That event eliminated 86 percent of all animal species across the globe.
- Before the extinction event, dinocephalians were one of the major groups of large terrestrial animals that thrived on land.
- They were medium to large-sized creatures with both **carnivorous and herbivorous representatives**.
- They had thick cranial bones, which led to the group's name, which translates to "terrible head" in Greek.
- These animals are rare in other parts of the world but **well-known in South**

**Africa and Russia.**

- It is the only known species in Brazil.

**Rubber Board to increase area under rubber in Northeast**

*Natural Rubber*

- Natural rubber is a polymer made up of a **chemical molecule called isoprene.**
- It is a native of the Amazon basin, which was introduced to countries in the tropical belts of Asia and Africa in the late nineteenth century.
- Climatic conditions required for Rubber cultivation
  - Rubber trees **require moist and humid climates** with heavy **rainfall of more than 200 cm.**
  - It grows well in equatorial climates and temperatures **above 25 degrees Celsius.**
  - **Soil:** Well-drained, weathered soils.

*Rubber plantation in India*

- India is the **third largest producer**, the fourth largest consumer of natural rubber and the fifth largest consumer of natural rubber and synthetic rubber together in the world.
- **Rubber Growing Areas in India**
  - **Traditional Areas:** Primarily in Tamil Nadu's Kanyakumari District and Kerala.
  - **Non-traditional regions:** Coastal Karnataka, Goa, Maharashtra's Konkan Region, coastal Andhra Pradesh and Orissa, the northeastern provinces, and the Andaman and Nicobar Islands, among other places.

*Rubber Board*

- It is a statutory organisation constituted **under the Rubber Act, 1947.**
- It functions under the administrative control of the **Ministry of Commerce and Industry.**
- **Functions:**
  - It is **responsible for the development of the rubber industry** in the country by assisting and encouraging research, development, extension and training activities related to rubber.
  - It also **maintains statistical data of rubber**, takes steps to promote the marketing of rubber and undertakes labour welfare activities.
- **Composition**
  - The Board is headed by a **Chairman appointed by the Central Government.**
  - It has **28 members** representing various interests in the natural rubber industry.
- **Headquarters:** Kottayam, Kerala.

**Gandhi Sagar wildlife sanctuary to be new home for South African cheetahs**

*Gandhi Sagar Wildlife Sanctuary*

- **Location:** It is situated on the **northern boundary of the Mandsaur and**

### **Nimach districts in Madhya Pradesh.**

- It is spread over an area of **368.62 km<sup>2</sup> (142.32 sq mi)** adjoining Rajasthan state.
- It lies in the **Khathiar-Gir dry deciduous forest ecoregion**.
- It was notified in the year 1974 and **added to the list of sanctuaries in 1984**.
- **River Chambal flows** through the sanctuary, **dividing it into two parts**.
- **Topography:** The sanctuary is characterised by its **diverse topography**, which includes **hills, plateaus, and the catchment area of the Gandhi Sagar Dam on the Chambal River**.
- The sanctuary **has many places of historical, archaeological** and religious importance, **such as Chaurasigarh, Chaturbhujnath temple, Bhadkaji rock paintings**, Narsinghjar Hinglajgarh fort, Taxakeshwar temple etc.
- **Flora:** The principal tree species found here are **Khair, Salai, Kardhai, Dhawda, Tendu and Palash**.
- **Fauna:**
  - Herbivores like **Chinkara, Nilgai and Spotted Deer**, and **carnivores like the Indian Leopard, Striped Hyena and Jackal** are found in good numbers in the region.
  - It also has a **good population of crocodiles, fish, otters and turtles**.

### **Two new antlion species discovered from Kerala**

#### *Antlion species*

- These two new antlion species belong to **Myrmeleontidae** family of the **order Neuroptera**.
- Antlions are commonly known for **their pit-building habit**.
- Larval stages of only some **antlion genera construct the conical pits** in loose, dry soil as their predation strategy.
- Larvae of Nemoleon do not build pits and live under the surface in loose soils where they are protected from direct sunlight, wind, and rain.
- Antlions can be easily distinguished by their **long, distinct antennae**.
- The genus Nemoleon is reported for the first time from the Oriental region.
- This is the 5th and 6th antlion species reported from Kerala and the 125th and 126th species from India.
- These are found throughout **the world, primarily in dry, sandy regions**.
- The research was conducted with financial assistance from the Council of Scientific and Industrial Research (CSIR).

### **In San Francisco Bay, ecologists work to protect sevengill sharks**

#### *Broadnose Sevengill Shark*

- It is a **large seven-gilled** with a wide head and short, blunt snout shark.
- It is related to sharks that lived in the **Jurassic Period about 300 million years ago**.
- They prefer **tropical, temperate, shallow waters**

- **Distribution:**
  - It is found in all oceans except the North Atlantic and the Mediterranean Sea.
  - In the eastern Pacific Ocean, they are found from southeastern Alaska to southern Baja California, Mexico and from Colombia to Chile.
- **Biology and Behaviour**
  - They can grow to a **maximum length of 2.9 m**. Females grow longer than their male counterparts.
  - They feed on anything, such as other sharks, rays, chimaeras, bony fish, hagfish, dolphins and porpoise meat, seals, shark egg cases and sea snails.
- **Conservation status**
- **IUCN:** Vulnerable

### Shore bird from Arctic region makes a stopover in urban water body in Coimbatore

#### *Red-necked phalarope*

- It is a fairly **small shorebird** known for spinning frantically on water to stir up small invertebrates.
- It has a **circumpolar distribution** and is found **in both boreal and tundra zones between 60 and 70 degrees latitude**.
- These phalaropes can be found in coastal regions of the **Arctic Ocean**, south to the Aleutians and Northwest to Britain.
- In the winter, it spends most of its time on the ocean.
- During this non-breeding season, phalaropes can be found off central-west South America, in the Arabian Sea and from central Indonesia to western Melanesia.
- **Appearance and behaviour:**
  - The bird mainly **feeds on small aquatic invertebrates and plankton**.
  - It exhibits a typical feeding behaviour of spinning on the surface of the water.
  - This rapid circling is believed to bring the prey to its feeding range.
  - Unlike in other species, **female Red-necked phalaropes** are brighter than males.
  - During the breeding period, the species have chestnut-red plumage from behind the ear to the downsides of the neck.
  - **Females** are observed to be **polyandrous**, that is, mating with more than one male.
  - The males brood chicks and feed them.
- **Conservation status**
  - **IUCN:** Least concern

### MMRDA Achieves Breakthrough In Tungareshwar Tunnel To Cross Wildlife Sanctuary

#### *Tungareshwar Wildlife Sanctuary*

- **Location:** It is located in the **Palghar district of Maharashtra, 75 km away from Mumbai.**
- It forms a **corridor between Sanjay Gandhi National Park and Tansa Wildlife Sanctuary.**
- **Landscape:** It is characterised by **hilly terrain, dense forests, and small rivers or streams.**
- **Vegetation:** There are three different types of forests – **Dry Deciduous, Moist Deciduous and Semi Evergreen.**
- **Flora:** It is home to several species of trees, including **teak, bamboo, and mango.**
- **Fauna:**
  - Some commonly spotted animals in the sanctuary include **Leopard, Wild Boar, Barking Deer, Langur, Bonnet and Rhesus Macaque,** and Black-naped Hare.
  - A multitude of birds, including the **Crested Serpent-eagle, Jungle Owlet, White-eyed Buzzard, Oriental Honey-buzzard,** Emerald Dove and Heart-spotted Woodpecker, can be found here.
- **Several ancient temples** are within its boundaries. The most famous of these temples is the **Tungreshwar Temple, dedicated to Lord Shiva.**

### 9,600 People Shifted To Safety After Heavy Rain Overflows Narmada, IMD Predicts Extreme Rainfall Till Tuesday

*Sardar Sarovar Dam (SSD)*

- SSD is a **concrete gravity dam** built on the **Narmada River** at Kevadia in **Gujarat's Narmada district.**
- The dam was **named after Sardar Vallabhbhai Patel.**
- Having a **length of 1.2 km and a depth of 163 m,** it is the **third-highest concrete dam in India,** the first two being Bhakra (226 metres) in Himachal Pradesh and Lakhwar (192 meters) in Uttar Pradesh.
- **In terms of the volume of concrete involved** in gravity dams, this dam will be **ranked as the second largest in the world after the Grand Coulee Dam in the USA.**
- It is a **part of the Narmada Valley Project,** a large hydraulic engineering project involving the construction of a series of large **irrigation and hydroelectric multi-purpose dams on the Narmada River.**
- The **dam has two powerhouses** – a canal head powerhouse and a river bed powerhouse with an installed **capacity of 250 MW and 1,200 MW, respectively.**
- **Power benefits are shared among Madhya Pradesh, Maharashtra and Gujarat** in the **ratio of 57:27:16,** respectively.
- **Reservoir:** The dam forms a vast reservoir known as the "**Sardar Sarovar Reservoir**" or "**Narmada Lake,**" which spans across several districts in Gujarat.

*Narmada River*

- It is the **largest west-flowing river in peninsular India.**



- **Origin:** It rises from **Narmada Kund**, located at **Amarkantak**, in the Anuppur district of **Madhya Pradesh**, at an **elevation of about 1057 m in the Maikala range**.
- **Course:** The river **flows through Madhya Pradesh, Maharashtra and Gujarat between Vindhya and Satpura hill ranges before falling into** the Gulf of Cambay in **the Arabian Sea about 10 km north of Bharuch, Gujarat**.
- **Length:** The total length of the river from source to sea is **1312 kilometres (815 miles)**.
- The river has **numerous waterfalls, notably the Dhuandhar Falls**, southwest of Jabalpur.
- **Tributaries:** The Narmada has several tributaries, with the most significant ones being the **Tawa, Barna, Hiran, and Orsang rivers**.

### Finance minister Nirmala Sitharaman launches key initiatives for farmers

#### *Kisan Rin Portal*

- The portal **helps farmers avail of subsidised loans under the Kisan Credit Card (KCC)**.
- It was **developed in collaboration with multiple government departments**.
- It **offers a comprehensive view of farmer data, loan disbursement specifics, interest subvention claims, and scheme utilisation progress**.
- It **fosters seamless integration with banks** for more focused and efficient agriculture credit.

#### *Kisan Credit Card (KCC)*

- The Kisan Credit Card (KCC) **scheme was introduced in 1998 to issue KCC to farmers on the basis of their holdings** for uniform adoption by the banks so that farmers may use them **to readily purchase agriculture inputs** such as seeds, fertilisers, pesticides, etc and draw cash for their production needs.
- It **was developed by NABARD** (the National Bank for Agriculture and Rural Development),
- The scheme was **further extended for the investment credit requirement of farmers, allied and non-farm activities, in the year 2004**.
- The scheme was **further revisited in 2012** with a view **to simplify the scheme and facilitate the issue of Electronic Kisan Credit Cards**.
- **Applicability:** It is to be implemented by **Commercial Banks, RRBs, Small Finance Banks and Cooperatives**.
- **Objective:** Aims at providing adequate and **timely credit support from the banking system under a single window** with a flexible and simplified procedure to the farmers for their cultivation and **other needs as indicated below:**
  - To meet the **short-term credit requirements** for the cultivation of crops;
  - **Post-harvest expenses;**
  - **Produce marketing loan;**
  - **Consumption requirements of farmer household;**
  - **Working capital for maintenance of farm assets** and activities allied

- to agriculture;
- **Investment credit requirement for agriculture and allied activities.**
- **Eligibility:**
  - **Farmers - individual/joint borrowers who are owner cultivators;**
  - **Tenant farmers**, oral lessees & share croppers;
  - **Self Help Groups (SHGs) or Joint Liability Groups (JLGs) of farmers**, including tenant farmers, share croppers etc.;
- **Features:**
  - Banks provide **single credit facility/ term loans to farmers.**
  - Farmers can take a **loan of up to Rs 3 lakh** in the scheme.
  - Farmers having KCC credit are **covered under personal accidental insurance up to Rs 50,000 for permanent disability and death and up to Rs 25,000 for other risks.**
  - **Quantum of loan for the 1st year** under this scheme is **assessed on the basis of the cost of cultivation, post-harvest expenses and farm maintenance cost.**
  - **For the subsequent 5 years**, the **loan will be sanctioned on the basis of the increase in the scale of finance.**
  - The **long-term loan limit is based on the proposed investments during the five-year period and the bank's perception** of the repaying capacity of the farmer.
  - The **repayment period** is decided **on the basis of the harvesting of the crop and its marketing period.**
  - Banks **will not seek security on loans up to Rs. 1.60 lakh.**
  - **The validity of KCC is for 5 years.**

### Eco-restoration project covers Anamudi Shola national park area in Munnar with natural grasslands

#### *Anamudi Shola National Park*

- It is located in the **state of Kerala.**
- It is surrounded by **Eravikulam National Park, Pampadum Shola National Park, Chinnar Wildlife Sanctuary** and Mathikettan Shola Park.
- **Vegetation:**
  - It consists of **southern subtropical hill forests**, southern **montane wet temperate forests and moist deciduous forests.**
  - The unique thing in the dense shola woods that houses a dense patch of stunted trees will be the luxurious **presence of lichen, mosses, and climbers.**
- **Flora:** The place is home to around 174 species of herbs and shrubs, 62 species of trees and around 40 species of climbers, of which quite a few of them are endemic.
- **Fauna:** Leopards, civet cats, wolves, Indian bison, wild boars, elephants, tigers, panthers, sloth bears etc.

### Most Species Of 'World's Largest Flower' Risk Extinction

### *Rafflesia*

- Rafflesia is a **genus of parasitic flowering plants native to Southeast Asia.**
- These plants are **renowned for producing the largest individual flowers in the world**, both in terms of size and weight.
- They are **often referred to as "corpse flowers" due to their foul odour.**
- **Distribution:** They inhabit specialised localities in the **tropical rainforests of Sumatra, Java, Borneo, Peninsular Malaysia**, southern **Thailand** and the **Philippines.**
- There are **42 known species of Rafflesia**, and the **most famous species** within this genus is **Rafflesia arnoldii.**
- **Features:**
  - They are massive and can reach up to **3 feet (almost 1 meter) in diameter** and **weigh up to 7 kg.**
  - **Parasitic Lifestyle:**
    - They are **parasitic**, meaning they **do not have leaves, stems, or roots** like traditional plants.
    - Instead, **they depend on a host vine called Tetrastigma for nutrients and support.**
    - Rafflesia's **only visible part is the flower.**
  - **Limited Blooming Period:** They have a short blooming period, **often lasting only a few days to a week.**

### Northeast's mithun gets 'food animal' tag and its meat a leg-up

#### *Mithun*

- The Mithun or gayal (*Bos frontalis*) is considered a descendant of **the Indian Gaur or bison.**
- It plays an important role in the socio-economic and cultural life of tribes such as the Nyishi, Apatani, Galo and Adi in Arunachal Pradesh.
- It is distributed in **Northeast India, Bangladesh, northern Myanmar and in Yunnan, China.**
- It is known as the '**cattle of the mountain**'.
- The gayal is the state animal of Arunachal Pradesh and Nagaland.
- It has a lot of business potential and the potential to provide nutritional, livelihood and financial security.
- The Indian Council of Agricultural Research launched **the M-ANITRA app** to register Mithun farmers as "buyers" and "sellers" with the aim of helping them do business at competitive prices.
- **Conservation status**
  - **IUCN:** Vulnerable
  - **CITES:** Appendix I.

#### *Food Safety and Standards Authority of India*

- It is a statutory body established under **the Food Safety and Standards Act, 2006 (FSS Act).**
- FSS Act of 2006 consolidated various acts & orders that had earlier handled

food-related issues in various Ministries and Departments.

- **Nodal ministry:** Ministry of Health & Family Welfare.

### Rare bird spotted along Ghaghra River in Uttar Pradesh

#### *Indian Skimmer*

- It is an odd **bird which belongs to the family of skimmers**, Rynchopidae.
- **Scientific Name: Rynchops albicollis**
- It gets its name from the way it feeds, flying low over the water surface and 'skimming' for fish.
- **Other names: Indian scissors-bill**
- **Habitat:** It occurs primarily on **larger, sandy, lowland rivers, around lakes and adjacent marshes** and, **in the non-breeding season, in estuaries and coasts.**
- **Distribution:**
  - These skimmer species **were distributed in north Indian rivers, Pakistan, Nepal, Bangladesh**, Myanmar, China, Cambodia, Laos and Vietnam.
  - Now, much of the population is **confined to north Indian River systems and Pakistan.**
  - **About 20% of the total population nest along river Chambal.**
- **Features:**
  - It measures **40 to 43 cm in length** and has a **wingspan of 110 cm.**
  - The **overall plumage is white on the underside and black on the upper side.**
  - The **forehead and the collar are white**, and the **crown is black.**
  - The **tail is short and forked.** The **central tail feathers are black.**
  - The **bill is long and thick.** It is **colored bright orange with a yellow tip.**
  - **Diet: Small fish, crustaceans, aquatic insects** and insect larvae.
- **Conservation Status:**
  - **IUCN Red List: Endangered**

#### *Dudhwa Tiger Reserve:*

- **Location:** It is located on the **Indo-Nepal border** in the district of **Lakhimpur-Kheri in Uttar Pradesh.**
- It **includes the Dudhwa National Park and two nearby Sanctuaries, viz. Kishanpur and Katerniaghat**, besides forest areas of North Kheri, South Kheri and Shahjahanpur forest divisions in its buffer.
- **Rivers:** The **Sharda River** flows by the Kishanpur WL Sanctuary, **the Geruwa River** flows through the Katerniaghat WL Sanctuary, **and the Suheli and Mohana streams** flow in the Dudhwa National Park, **all of which are tributaries of the mighty Ghaghra River.**
- **Vegetation:** The vegetation is of the **North Indian Moist Deciduous type**, containing some of the **finest examples of Sal forests** (*Shorea robusta*) in India.
- **Flora:** The flora is **predominantly Sal forest along with its associate tree**

**species like Terminalia alata (Asna), Lagerstroemia parviflora (Asidha), Adina cordifolia (Haldu), Mitragyna parviflora (Faldu), Gmelina arborea (Gahmhar), Holoptelea intgrifolia (Kanju) etc.**

- **Fauna:**

- The major mammals include **Tiger, Fishing cat, Monkey, Langur, Mongoose**, Small Indian Mongoose, small Indian civet, Jackal etc.
- **Birds include** a wide variety of species, which include migratory and resident ones like **Dabchick, spotbilled pelican, Large cormorant**, Little cormorant, Grey Heron, White stork, Black storck, White Ibis etc.
- **Reptiles include Mugger, Ghariyal, Python, Sandboa, Banded krait**, Russel's viper, Rat snake etc.

### New fish species discovered in Bengal's Digha harbour

*Pterygotrigla intermedica*

- It is commonly known as **gurnards or sea-robins** and belongs to the **family Triglidae**.
- It is the **fourth species of Pterygotrigla genus** reported in India so far, and there are a total of 178 species of the Triglidae family worldwide.
- The specimens of this fish were found to be very distinct from other gurnad species in various aspects, such as snout length, shape of the internuchal space, and size of the cleithral spine.
- **Features**
  - The scientists found a distinct **pectoral-fin with black membranes** on the inner surface, white posterior margin and three small white spots basally in fin, each ray creamy white on the new species
  - It had a combination of characters like a long opercular spine and a very short cleithral spine.
  - The lateral line, gill rakers on upper limb and 12–13 on lower limb of first gill arch, and a large black blotch between the 4th and 6th spines of the first dorsal fin.

*Zoological Survey of India*

- It was **established in 1916** as the premier Indian organisation in zoological research and studies.
- **Nodal Ministry:** the Ministry of Environment, Forest and Climate Change.
- **Objectives**
  - **Exploration, survey, and monitoring of faunal** (animal) diversity in various states, ecosystems and protected areas of India.
  - **Periodic review** of the status of threatened and endemic species.
  - **Preparation of databases** for the recorded species of the country.

### In a first, RNA is recovered from extinct Tasmanian tiger

*Tasmanian tiger*

- The Tasmanian **tiger resembled a wolf**, aside from the tiger-like stripes on its back.
- The last known Tasmanian tiger succumbed in a Tasmanian zoo in 1936.

- It is a **large carnivorous marsupial** now believed to be extinct.
- It was the only member of the **family Thylacinidae** to survive into modern times.
- It was widespread over **continental Australia**, extending north to **New Guinea** and south to Tasmania.
- It was an apex **predator** that hunted kangaroos and other prey.

#### RNA

- It is a complex compound of high molecular weight that functions in cellular protein synthesis.
- It replaces DNA (deoxyribonucleic acid) as a **carrier of genetic** codes in some viruses.
- It consists of **ribose nucleotides**(nitrogenous bases appended to a ribose sugar) attached by phosphodiester bonds.
- The nitrogenous bases in RNA **are adenine, guanine, cytosine, and uracil**.
- It is a **single-stranded molecule** that carries **genetic information**.
- RNA synthesises the panoply of proteins that an organism requires to live and works to regulate cell metabolism.

### Madhya Pradesh notifies 'Veerangana Durgavati Tiger Reserve' as its 7th Tiger Sanctuary

#### *Veerangana Durgavati Tiger Reserve*

- **Location:** It is spread across Sagar, Damoh and Narsinghpur districts of **Madhya Pradesh**.
- It is spread over an area of **2,339 square kilometres**.
- It is the **seventh tiger reserve in Madhya Pradesh**.
- It will **encompass areas within the Nauradehi Wildlife Sanctuary and Durgavati Wildlife Sanctuary**.
- A **green corridor linking Panna Tiger Reserve (PTR) with Durgavati will be developed for the natural movement of the tiger** to the new reserve.
- **Rivers:** Parts of the reserve fall **under the Narmada and Yamuna River basins**.
- The **Singorgarh Fort is located within the reserve**.
- **Vegetation: Dry deciduous type**
- **Flora:** The chief floral elements include **Teak, Saja, Dhaora, Ber, Amla, etc.**
- **Fauna:** Tiger, leopard, wolf, jackal, Indian fox, striped hyena, **Nilgai, Chinkara, Chital, Sambhar, Black Buck, Barking deer**, Common Langur Rhesus Macaque etc.

### Biologists in slow and steady race to help North America's largest and rarest tortoise species

#### *Bolson tortoises*

- It is the **largest and rarest land reptile**, as well as the rarest of the six Gopherus species native to the **North American Continent**.
- Adult males are generally smaller than females in this species.
- The tortoise is a land-dwelling reptile that **spends more than 95% of its**

- time in a burrow** that it constructs with its shovel-like front feet.
- All foraging, nesting and mating activities take place during the tortoise's active season from roughly April to October.
  - The average life span of a Bolson tortoise is not known but probably lies upward of a century.
  - **Distribution:**
    - This species at present, is restricted to a relatively small area of the grasslands of **north-central Mexico** in the states of Chihuahua, Coahuila and Durango, where it exists in disjunct sub-populations.
  - **Conservation status**
    - **IUCN:** Critically Endangered

### Thousands on alert in Indonesia's Java after Mt. Semeru eruption

#### *Mt. Semeru volcano*

- It is an active volcano in **East Java, Indonesia**.
- It is located **in a subduction zone**, where the **Indo-Australia plate subducts** under the Eurasia plate.
- It is the **highest mountain** on the island of Java.
- The name "Semeru" is derived from Meru, the central world mountain in Hinduism, or Sumeru, the abode of gods.
- Indonesia sits on the **Pacific Ring of Fire**, where the meeting of continental plates causes high volcanic and seismic activity.

#### *Pacific Ring of Fire*

- It, also known as the **Circum-Pacific Belt**, is a path along **the Pacific Ocean** characterised by active volcanoes and frequent earthquakes.
- Its length is approximately 40,000 kilometres.
- It traces boundaries between several tectonic plates—including **the Pacific, Juan de Fuca, Cocos, Indian-Australian, Nazca, North American, and Philippine Plates**.

### Rare leucistic Indian spot-billed duck spotted in water body near Tiruppur

#### *Indian-Spot Billed Duck*

- It is a **large dabbling duck** that is a **non-migratory breeding duck** throughout freshwater **wetlands in the Indian subcontinent**.
- The **name is derived from the red spot at the base of the bill** that is **found in the mainland Indian population**.
- **Scientific Name: Anas poecilorhyncha**
- **Distribution and Habitat:**
  - It is a **resident throughout Pakistan and India in freshwater wetlands**.
  - They **inhabit both inland and coastal wetlands** such as ponds, lakes, pools, streams, creeks, estuaries, tidal flats and marshes.
  - They **tend to avoid very large patches of open water and prefer medium-sized wetlands with vegetation cover**.

- **Features:**
  - It has a **scaly patterned body** with a **green speculum** and a **band of white tertials**.
  - It **measures 55–63 cm in length** and **83–95 cm across the wings**, with a **body mass of 790–1,500 g**. **Males are larger than females**.
  - These are **mainly grey ducks with a paler head and neck** and a **black bill tipped bright yellow**.
  - The **wings are whitish with black flight feathers below**, and **from above show a white-bordered green**.
  - **The legs and feet are bright orange to coral red**. Juveniles are browner and duller than adults.
  - **Feeding Habits:** They mostly **feed on grasses and other vegetations**. Sometimes they may feed on insects.
- **Conservation Status:**
  - **IUCN Red List: Least Concern**

### Red Sea's coral face new threat: Sea urchin deaths linked to mystery disease

#### *Sea Urchins*

- Sea urchins belong to a **group of marine invertebrates called echinoderms**, which means **spiny-skinned animals**.
- It includes other well-known **marine creatures like starfish and sea cucumbers**.
- Sea urchins are **characterized by their spherical to somewhat flattened, spiny bodies**, and they are **found in oceans worldwide, from shallow coastal waters to deep-sea environments**.
- They **live on the ocean floor, usually on hard surfaces**, and **use tube feet or spines to move about**.
- The **largest urchin** (known from a single specimen) is **Sperostoma giganteum of deep waters off Japan**.
- **Features:**
  - They have a **globular body** and a **radial arrangement of organs**, shown by **five bands of pores running from mouth to anus over the test** (internal skeleton).
  - The **pores accommodate tube feet, which are slender, extensible, and often sucker-tipped**.
  - They **have a hard exoskeleton**, or test, **made up of interlocking plates or ossicles**, which are often **covered with movable spines**.
  - **From nodules on the test arise long, movable spines and pedicellariae** (pincerlike organs); these structures may **have poison glands**.
  - **Feeding:**
    - They are **herbivorous**, primarily **feeding on algae and plant material**.
    - They **use their specialized mouthparts, called Aristotle's lantern**, to **scrape algae and other food sources** from rocks or



the seafloor.

### No brain, no problem: Tiny jellyfish can learn from experience

*Caribbean box jellyfish*

- These are barely a centimeter long and have no brain.
- It belongs **to the Cnidaria phylum**. (the animal group which includes jellyfish, sea anemones and coral).
- The Caribbean box jellyfish, or **Tripedalia cystophora** is known to be able to navigate through **murky water** and a maze of submerged mangrove roots.
- These gelatinous, fingernail-sized creatures are capable of **learning from visual cues** to avoid swimming into obstacles.
- It has a **cognitive ability** which is never seen before in animals with such a primitive nervous system.
- Their performance is called "**associative learning**" is comparable to far more advanced animals such as fruit flies or mice
- They have **four visual sensory centres called rhopalia**, each of which has lens-shaped eyes and around a thousand neurons **which help in avoiding harm**.
- They can respond to "**operant conditioning**" i.e they can be trained to "**predict a future problem and try to avoid it.**"

### Madhya Pradesh's newest Ramsar wetland covered in invasive water hyacinth, threatening biodiversity

*Cabomba furcata*

- It is popularly called Pink **Bloom** due to its massive flowering.
- It is native to central **and South America** which was brought to Kerala as an aquarium plant and has escaped to the wild.
- It is a **submerged perennial aquatic plant** that grows in stagnant to slow-flowing freshwater.
- The plant has a high natural dispersal potential due to its ability to readily fragment and spread both actively and passively.
- It requires **a large quantity of oxygen** for its growth and will choke water bodies and drainage canals.
- It causes decline in diversity of native aquatic plants and causes economic losses by affecting yield of freshwater fishes.

*Kole wetlands*

- It is the **largest brackish, humid tropical wetland** ecosystem located in the state of **Kerala**.
- Extending from the northern **bank of Chalakudy River** in the south to the **southern bank of Bharathapuzha River** in the north
- It is situated in **the central Asian Flyway of migratory birds**.

### Maharashtra's ephemerals: plants that wait for monsoon to bloom

*Ephemerals*

- These are any **short-lived plant**, usually one that has one or more

- generations per year.
- They **grow only during favourable** periods (as when adequate moisture is available) and passing the unfavourable periods in the form of seeds.
  - They are of two types — **annual and perennial**
    - **Annual ephemerals** form new individuals every year and are seen for a very short period.
    - They **form seeds at the end of their life cycle**, remaining dormant till the next year.
    - **Perennials** have a source like a tuber or a bulb in the soil, so it is the same individual, but the other parts (stem, flowers) are newly formed.”
  - Monsoon ephemerals bloom towards the end of May and throughout June, July, August, and September.
  - Some other monsoon ephemerals will **just form leaves and little branch** structures after a few showers.
  - These leaves stay for a month or more and then flowering starts, which goes on till July and August.
  - The onset of monsoon **brings flowers such** as ground \*\*orchids (\*\*Nervilia and Eulophia), lilies (crinum lily, pancratium lily, grass lily, star lily), **wild yam** (suran), and Indian squill.
  - **Significance**
    - The primary job of these flowers is to act as an important source of **nectar and pollen for native pollinators**.
    - Their presence in all micro habitats on a plateau ensures the **appropriate presence of soil and, most importantly, water**.

### Combing operations conducted in areas surrounding Mukurthi National Park in the Nilgiris

#### *Mukurthi National Park*

- It is located in the **western corner of the Nilgiris Plateau** in the northwest corner of Tamil Nadu.
- The park was created to protect its **keystone species, the Nilgiri tahr**.
- **Pykara and Kundah rivers** flow through the park along with several perennial streams that originate in the park and drain into the Bhavani Puzha.
- It is designated as the UNESCO World Heritage Site
- **Vegetation:** The Park is characterised by **montane grasslands** and shrublands interspersed with **sholas in a high altitude** area of high rainfall.
- **Flora:** Here one can find shrubs like **Gaultheria fragrantissima, Helichrysum and Berberis** Other plants which can be seen here are Rhododendrons, Cinnamon, Mahonia, Satyrium, Raspberries etc.
- **Fauna:** The park is home to some of the endangered wild species like Nilgiri tahr, Indian elephants, Nilgiri Langur, Bengal tiger and bonnet macaque etc.

### Chincholi Wildlife Sanctuary is like an oasis in arid Kalyana Karnataka

#### *Chincholi Wildlife Sanctuary*

- It is located around the Chandrampalli Dam in the **Kalaburagi district of Karnataka**.
- It was declared a sanctuary in 2011.
- It is the **first dry land Wildlife Sanctuary** in South India.
- This is the only area in the Hyderabad Karnataka Region with rich floristic diversity
- **Vegetation:** The Sanctuary has good **dry deciduous and Moist deciduous forest** in the core with Acacia and Teak plantations on the fringes.
- **Flora:** Apart from **medicinal herbs** and trees, species like Red Sanders and Sandalwood are found abundantly.
- **Fauna:** It is home Black Buck, Common Fox, Four-horned Antelope, Fruit bat, Hyena, Indian Wolf etc. Over 35 species of birds, including Black Drongo, Black-winged Kite, Blossom – headed Parakeet, Blue pigeon, Black-headed Oriole and Grey partridge are also found in this Sanctuary.
- **Local Tribes:** Chincholi is also home to **Lambani Tandas**, a protected tribal community that lives in the forests in harmony with nature.

## 20 Different Butterfly Species Identified And Recorded At Kamlang Tiger Reserve

### *Kamlang Tiger Reserve*

- **Location:** It is located in the southeastern part of **Lohit District in Arunachal Pradesh near the border with Myanmar**.
- It is **named after the Kamlang River, which flows through the reserve** and joins the Brahmaputra.
- It is spread **between the famed Namdapha National Park on its south and Lang River on its north**.
- The **local inhabitants are Hishmi, Digaru and Mizo**.
- **Landscape:** It encompasses a diverse range of landscapes, including **dense tropical forests, grasslands, rivers, and hills**.
- **Climate:** It enjoys a **sub-tropical climate** as it falls within the sub-tropical zone.
- **Vegetation:**
  - The vegetation may broadly be **classified into tropical, temperate and alpine**.
  - The **lower reaches and foothills of the region are covered with tropical wet evergreen forests**, while the **alpine vegetation dominates the higher altitudes**.
- **Flora:** Common species of trees in the reserve include **Ammora wallichii (Amari), Gmelina arborea (Gamari), Terminalia chebula (Hillika)**, Canarium resiniferum (Dhuna) and many others.
- **Fauna:**
  - **All four big cats, including the Snow Leopard, Clouded Leopard, Leopard and Tiger**, are the common inhabitants.
  - **Certain endangered species, such as Himalayan Palm Civets, Leopard Cat, Slow Lories and Hoolock Gibbon**, can also be spotted

in the sanctuary.

- Other species commonly found here are **Giant and Flying Squirrels, Hornbills, Deer, Civets**, Boar, Capped Langur, Stump Tailed Macaque etc.

### Scientists uncover a scaly surprise with new pangolin species

#### *Manis Mysteria*

- It is a **newly discovered Pangolin species**.
- The newly identified pangolin species **emerged from a detailed study of scales seized in China's Yunnan province in 2015 and 2019**.
- This new species is **believed to have diverged from its Philippine and Malayan relatives approximately five million years ago**.

#### *Pangolins*

- They are **mammals known for their distinctive appearance and protective scales**.
- They are **often referred to as "scaly anteaters"** due to their **characteristic scales and their diet, which primarily consists of ants and termites**.
- Pangolins are **found in parts of Africa and Asia** and are known for their elusive nature and **status as the most trafficked mammals in the world**.
- **Features:**
  - They are easily recognizable by their **armor-like scales, which cover their bodies**. These scales are **made of keratin, the same protein found in human hair and nails**. They are the **only known mammals with this feature**.
  - **When threatened, pangolins can curl into a tight ball**, with their **scales forming a protective barrier**.
  - Their **diet consists mainly of ants and termites**, which they **capture using their long tongues** (A pangolin's tongue is longer than its body).
  - **Pangolins have no teeth; they chew with gravel and and keratinous spines inside the stomach**.
  - They are **most active at night** and are **solitary creatures**.
- **Threat:**
  - **All pangolin species are listed on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species**.
  - **The Indian pangolin, also called thick-tailed pangolin, is classified as Endangered under the IUCN Red List**.

### US scientists spot rare 'dumbo' octopus during deep-sea dive

#### *Dumbo Octopus*

- They are known as the **deepest living of all octopus species**.
- **Genus: Grimpoteuthis spp.**
- They **get their name from their distinctive flapping fins** that bear a striking **resemblance to the oversized ears of the iconic Disney elephant character**.
- There are **about 17 species of Dumbo octopus that belong to a group**

called “umbrella octopus,” because they are able to float with an umbrella-like look to their mantle.

- **Distribution: Worldwide in tropical to temperate latitudes**
- **Features:**
  - **They live on the seafloor or hover just slightly above it at \*\*depths of depths of 3000 to 4000 m (\*\*9800 to 13000 ft).**
  - They are **small animals, around 8 inches tall, and have a pair of fins located on their mantle and webbing between their arms.**
  - The octopuses also have a **single line of about 65-68 suckers along each arm.**
  - **Unlike most octopuses, this sea creature doesn't have ink sacs, which are normally used as a defensive mechanism.**
  - It **uses its ear-like fins to propel through the water** and steers using its webbed arms.
  - Diet: It consumes snails, worms and other creatures that live near the ocean floor.

### Gujarat turns over new leaf, bans invasive tree species

*Conocarpus tree*

- It is a flowering plant belonging to the **family of Combretaceae.**
- It is an **invasive mangrove species.**
- Trees of this species **flower in winter** and spread pollen in nearby areas.
- It has been **used by various public authorities in India as landscaping for road medians**, along roads, and in public gardens.
- Countries in the Arabian Peninsula have **used the plant to block sand from desert storms and to control pollution.**
- This tree is famous for its **dark green leaves color throughout the year** and withstands harsh environmental conditions such as high and low temperatures.
- It is **very adaptive** and could grow even in areas **with extreme salinity.**
- It absorbs more water from soil than other species and is a threat to groundwater.
- This species goes deep into the ground and grows too much to **damage the communication cables, drainage lines and drinking water pipelines.**
- It is native to parts of **North and South America, as well as parts of Africa.**

### New Electric Blue Tarantula Species Discovered In Thailand

*Chilobrachys natanicharum*

- It is a **new species of tarantula found in the forests of Thailand.**
- It has a **"blue-violet hue resembling the color of electrical sparks.**
- **It derives its colours** not from the presence of any blue pigmentation but rather from "the **unique structure of their hair, which incorporates nanostructures** that manipulate light to create this striking blue appearance.
- **These hairs are present on various parts of the spider's body**, including its legs, chelicera (pincer-like mouth appendages), and carapace (upper shell).

- It is **both terrestrial and arboreal** - lives within tree hollows.

#### *Tarantula*

- Tarantulas are a **type of large, hairy spider belonging to the family Theraphosidae**.
- There are over **900 species of tarantulas found all over the world, except for Antarctica**.
- They **move slowly on their eight hairy legs**, but they are accomplished **nocturnal predators**.
- Adult tarantulas **average five inches (13 centimeters) long**. When spread out, their leg span is up to 11 inches (28 centimeters).

### **Draft Notification for ESZ Around Dachigam Park Unveiled**

#### *Dachigam National Park*

- **Location:** It is located 22 km (kilometers) from **Srinagar in Jammu and Kashmir**.
- It covers an area of **141 sq km (square kilometers)**.
- The **name literally stands for 'ten villages'**, which could be in **memory of the ten villages that were relocated** in order to create the park.
- It was **initially established to ensure the supply of clean drinking water to Srinagar city**.
- A protected area since 1910, it was **declared a national park in 1981**.
- The park is situated at **altitudes ranging from 5500 ft to 14,000 ft**.
- The park is best **known as the home of the Hangul, or Kashmir stag**. It holds the **last viable population of the vulnerable hangul** in the world.
- **Terrain:** Ranges from **gently sloping grasslands to cliffs and sharp rocky outcrops**.
- **Flora:** Includes wild **cherry, apple, pear, peach, plum, apricot, chestnut, willow, walnut, oak, pine, birch, poplar, chinar, and elm**.
- **Fauna:**
  - Besides Hangul, Dachigam is also famous for its populations of **musk deer, leopard, Himalayan Grey Langur, leopard cat, Himalayan Black Bear, yellow-throated marten**, among others.
  - It is the residence of raptors such as the **Eurasian eagle owl, Lammergeier, Eurasian griffon** and white-rumped vulture.

#### *Kashmir Stag*

- It is also called Hangul, which is a **subspecies of Central Asian red deer endemic to Kashmir and surrounding areas**.
- It is **found in dense riverine forests in the high valleys and mountains of Jammu and Kashmir and northern Himachal Pradesh**.
- In Kashmir, it is found primarily in the **Dachigam National Park** where it receives protection.
- A small population has also been **witnessed in Overa-Aru Wildlife Sanctuary** in south Kashmir.
- **Conservation status**
  - **IUCN: Critically Endangered**

- **CITES : Appendix I**

### Coimbatore's Kurichi tank turns home to long distance migrant bird Greater sand-plover

#### *Greater sand-plover*

- It is known for **long distance migration**.
- **Appearance:**
  - It is a **medium-sized plover** with a long hefty bill.
  - Breeding adults have a dark mask and orangish chest, neck, and forehead; females duller than males.
  - Non-breeding birds and immatures are sandy brown above and white below, with a white throat and "eyebrows."
  - Additionally, unlike some Lesser Sand-Plovers, Greater never has a black boundary around the throat.
- It breeds in **high-elevation areas**, where it favors arid, open habitats, sometimes near water. Winters on coastal mudflats and estuaries.
- It breeds during April to May in **central Asia**, late March to late May in **Turkey** and upto **late June in Armenia**.
- It winters in the shores of **Indian and Australian Oceans** after the breeding.
- **Diet:** The bird's diet consists of beetles, worms, crustaceans, molluscs, other insects and their larvae.
- **Habitat:** Mudflats and sandy shores.
- **Behaviour/Ecology:** Associates with other feeding shorebirds, especially Lesser Sand Plover.
- **Conservation status**
  - **IUCN:** Least Concern

### Damselfly species found in Western Ghats named after climate impact on insects

#### *Armageddon Reedtail*

- The species was discovered **northeast of Thiruvananthapuram**.
- **Features:** It has a captivating dark brown to black body with vibrant greenish-blue eyes, and half of its eight abdominal segments are marked with delicate pale blue markings.
- Its only habitat is **primary montane streams**, where it thrives **beneath dense canopy cover**.
- The name, Armageddon Reedtail, is a direct reference to the concept of "**Ecological Armageddon**", a term used to describe the devastating decline of insect populations around the world.
- **Threat:** This species faces the threat of extinction due to **habitat loss** and **changing environmental conditions**.

#### *Damselfly*

- These are insects in the sub-order **Zygoptera (meaning "paired-wings")**.
- These are **found mainly near shallow, freshwater habitats** and are graceful fliers with slender bodies and long, filmy, net-veined wings.

- These are generally **smaller, more delicate**, and fly weakly in comparison with dragonflies.
- Female damselflies normally use a **bladelike ovipositor to place eggs inside plant tissue**.
- In many species of Damselflies adults change colour as they mature.

### Assam-based oncologist among winners of 2023 Ramon Magsaysay Award

#### *Ramon Magsaysay Award*

- It is Asia's premier prize and the highest honour celebrates the greatness of spirit and transformative leadership in Asia.
- The Ramon Magsaysay Awardees, annually selected by the RMAF board of trustees, are presented with a certificate and a medallion with an embossed image of Ramon Magsaysay facing right in profile.
- From 1958 to 2008, the Award was given in six categories annually:
- Government Service: To recognise outstanding service in the public interest in any branch of government, including the executive, judicial, legislative, or military;
- Public Service: To recognise outstanding service for the public good by a private citizen;
- Community Leadership: To recognise leadership of a community toward helping the disadvantaged have fuller opportunities and a better life;
- Journalism, Literature, and Creative Communication Arts: To recognise effective writing, publishing, or photography or the use of radio, television, cinema, or the performing arts as a power for the public good;
- Peace and International Understanding: To recognise contributions to the advancement of friendship, tolerance, peace, and solidarity as the foundations for sustainable development within and across countries; and
- Emergent Leadership: To recognise an individual, forty years of age or younger, for outstanding work on issues of social change in his or her community but whose leadership may not yet be broadly recognised outside of this community.
- It is presented in formal ceremonies in Manila, Philippines, on August 31st, the birth anniversary of the much-esteemed Philippine President whose ideals inspired the Award's creation in 1957.

#### Indian winners on the list

- Prominent Indians who have won the award include Vinoba Bhave in 1958, Mother Teresa in 1962, Kamaladevi Chattopadhyay in 1966, Satyajit Ray in 1967, and Mahasweta Devi in 1997.
- In recent years, Arvind Kejriwal (2006), Anshu Gupta of Goonj (2015), human rights activist Bezwada Wilson (2016), and journalist Ravish Kumar (2019) have won the award.



## INTERNATIONAL RELATIONS

### India-Russia mull speedy operations on new sea route

#### *Eastern Maritime Corridor (EMC)*

- The EMC is a **proposed sea route between** the Indian port of **Chennai and the Russian port of Vladivostok**.
- The corridor is estimated to **bring down transportation time between Indian and Russian ports in the Far East Region by up to 40 percent (24 days from the current 40 days)**.
- **The present trade route between Mumbai, India, and St. Petersburg, Russia, covers a distance of 8,675 nautical miles.**
- The **EMC will cover a distance of about 5,600 nautical miles**, which is significantly **shorter than the current route via the Suez Canal**.
- Once complete, **EMC will take 24 days, down from presently over 40 days**, to transport goods from India to Far East Russia.
- **For India, it will provide a shorter and more efficient route to access the markets of the Far East, such as China and Japan.**

#### *Vladivostok*

- Vladivostok is a **major city in Russia, located in the Far East** of the country.
- It is located **on the Golden Horn Bay, north of North Korea, and a short distance from Russia's border with China.**
- It is the **largest port on Russia's Pacific coast, and home to the Pacific Fleet of the Russian Navy.**
- It is the **eastern railhead of the legendary Trans Siberian Railway**, which connects the Far East of Russia to the capital Moscow, and further west to the countries of Europe.
- At Vladivostok's massive port, **shipping and commercial fishing are the main commercial activities.**

### Military Leaders of 3 West African Countries Sign a Security Pact

#### *Liptako-Gourma Charter*

- The Liptako-Gourma Charter establishes **the Alliance of Sahel States (AES)**.
- Its aim is to "establish an **architecture of collective defence and mutual assistance** for the benefit of the population.
- This alliance will be a combination of military and economic efforts between the three countries.
- The charter binds the signatories to assist one another, including militarily — in the event of an attack on any one of them.
- It also binds the three countries to work to prevent or settle armed rebellions.

#### *Liptako-Gourma region*

- It is the region where the **Mali, Burkina Faso, and Niger** borders meet.
- It has been ravaged by jihadist insurgency in recent years.

#### *Alliance of Sahel States*

- The junta leaders of **Mali, Burkina Faso and Niger signed** a charter to establish a defence alliance known as the Alliance of Sahel States.
- Under this alliance, any attack on one or more signatory states will be considered an attack on all signatories.
- The alliance between three West African states, all ruled by military juntas and former **French colonies**.
- These three countries were also members of the **France-supported G5 Sahel alliance** joint force, with **Chad and Mauritania** being the other two allies.

### **PRESIDENT OF INDIA INAUGURATES ANNUAL GENERAL MEETING AND BIENNIAL CONFERENCE OF THE ASIA PACIFIC FORUM ON HUMAN RIGHTS**

#### *Asia Pacific Forum*

- It was **founded in 1996**.
- It has created a strong and united platform that brings together **National Human Rights Institutions (NHRIs)** from all corners of the Asia Pacific.
- It addresses some of the most serious human rights challenges in Asia Pacific region.
- It has **17 full members** and eight associate members.
- India has been a full time member since 1996.
- To be admitted as a full member, a National Human Rights Institution must fully comply with the **minimum international standards** set out in the Paris Principles.
- National Human Rights Institutions that partially comply with the Paris Principles are granted associate membership.
- Decisions about the admission of new members to the APF are made by the Forum Council.
- A fundamental goal of the APF **is to promote the establishment of independent NHRIs** in the Asia Pacific region and to support our members to do their work as effectively as possible.

### **I2U2 takes partnership forward, announces joint space venture**

#### *I2U2 Group*

- It is a grouping **of India, Israel, the United Arab Emirates, and the United States**.
- **Formation:**
  - The group was initially **formed in October 2021 to deal with issues concerning infrastructure, transport, and maritime security** in the region.
  - **Originally named the "International Forum for Economic Cooperation,"** it was **also known as the "West Asian Quad"** at the time.
  - **First virtual summit:** The group held their first virtual summit **in July 2022**.
- This unique grouping of countries **identifies bankable projects and initiatives** to tackle some of the greatest challenges, **with a particular focus**

**on joint investments and new initiatives in water, energy, transportation, space, health, food security, and technology.**

- It aims to mobilise private sector capital and expertise to achieve a variety of goals, including **modernising infrastructure, advancing low-carbon development pathways, and improving public health.**

### Philippines says Beijing installed floating barrier in contested area

#### *South China Sea*

- It is an **arm of the western Pacific Ocean that borders the Southeast Asian mainland.**
- **Boundaries:** It is bordered by **China, Taiwan, the Philippines, Malaysia, Indonesia, Brunei, and Vietnam.**
- It is **connected by the Taiwan Strait with the East China Sea and by the Luzon Strait with the Philippine Sea** (both marginal seas of the Pacific Ocean).
- The **South China Sea and the East China Sea together form the China Sea.**
- The **two major archipelagos are known as the Paracel Islands, controlled by China, and the Spratly Islands.**
- **Climate:** Weather in the sea is **tropical and largely controlled by monsoons.**
- It is the **second most used sea lane in the world.** It is a significant **trade route for crude oil from the Persian Gulf and Africa through the Strait of Malacca** to Singapore, Thailand, Hong Kong, Taiwan, South Korea, and Japan.
- **Major Ports: Hong Kong, Singapore, and Kaohsiung** in southern Taiwan.

#### *South China Sea dispute*

- **Several countries claim various parts** of the sea, and these claims often overlap.
- In particular, **China's sweeping claims - which include sovereignty claims over land parcels and their adjacent waters** - have angered competing claimants like Vietnam, the Philippines, Taiwan, Malaysia and Brunei.
- **Other countries have staked claims on islands and various zones in the sea, such as the Paracels and the Spratlys.**
- **Nine-dash line:**
  - **China claims by far the largest portion of territory** in an area demarcated by its so-called "nine-dash line".
  - The **line comprises nine dashes, which extend hundreds of miles south and east from its most southerly province of Hainan.**

### India and UN Join Forces to Empower Global South with Capacity Building Initiative

#### *India-UN Capacity Building Initiative*

- The initiative is **aimed at building the capacity of countries in the Global South.**

- The goal is to **share India's development experiences, best practices, and expertise** through capacity-building and training programs.
- It **extends the success of India's G20 Presidency**, which prioritised the inclusion of voices from the Global South in the G20 agenda.
- The initiative **builds upon the extensive cooperation in development and capacity building that India already has bilaterally** with the partner countries.
- As part of this initiative, the **UN India team and the Bill & Melinda Gates Foundation will “partner to leverage India's Technical and Economic Cooperation platform to share India's development experiences and best practices** across the world.
- It will also **put into action the development goals established during India's G20 Presidency**, including the **G20 Action Plan for advancing the Sustainable Development Goals (SDGs)** and enhancing technology and digital infrastructure.
- **What is the Global South?**
  - The Global South broadly comprises **countries in the regions of Africa, Latin America and the Caribbean, Asia** (excluding Israel, Japan, and South Korea), and Oceania (excluding Australia and New Zealand), **which are generally characterised by relatively low levels of economic and industrial development.**

### What is the 'Five Eyes' intelligence alliance?

#### *Five Eyes' intelligence alliance*

- It is a **multilateral intelligence-sharing network** shared by over 20 different agencies of five English-speaking countries — **Australia, Canada, New Zealand, the United Kingdom and the United States.**
- It is both surveillance-based and signals intelligence (SIGINT).
- Intelligence documents shared between the members countries are classified as **‘Secret—AUS/CAN/NZ/UK/US Eyes Only,’** which gave the group its title ‘Five Eyes.’
- **Background of the alliance**
  - The alliance between **the U.S. and the U.K.** evolved around the Second World War to counter the Cold War Soviet threat.
  - The two countries, which had successfully deciphered German and Japanese codes during the World War, forged a collaboration to share intelligence related to signals such as radio, satellite and internet communications.
  - In the aftermath of the war in 1946, the alliance was formalised through an agreement for cooperation in signals intelligence.
  - The treaty called the British-U.S. Communication Intelligence Agreement, **or BRUSA (now known as the UKUSA Agreement)**, was signed between the State-Army-Navy Communication Intelligence Board (STANCIB) of the U.S. and the London Signal Intelligence Board (SIGINT) of Britain.
- Its scope was limited to “communication intelligence matters only” related to

“unrestricted” exchange of intelligence **products in six areas**: collection of traffic; acquisition of communication documents and equipment; traffic analysis; cryptanalysis; decryption and translation; and acquisition of information regarding communication organisations, practices, procedures, and equipment.

- The arrangement was later extended to **‘second party’ countries** —Canada joined in 1948, while Australia and New Zealand became part of the alliance in 1956.

### Burkina Faso junta says it foiled coup attempt

*Burkina Faso*

- It is a **landlocked country in western Africa**.
- **Borders**: It is bounded by **Niger** to the east, **Mali** to the north and west, and **Benin, Togo, Ghana, and Ivory Coast** to the south.
- **Capital**: Ouagadougou
- Burkina Faso, **previously known as Upper Volta**, was **once part of French West Africa since 1896**. It **gained independence from France in 1960**.
- **Geography**:
  - It is predominantly characterized by **savannahs, plateaus, and low mountains** in the southwest.
  - The **northern region, known as the Sahel, is arid and desert-like**.
- **Languages**:
  - The **official language of Burkina Faso is French**, which is used in government and education.
  - There are **many indigenous languages** spoken throughout the country, with **Moore (Mossi) being one of the most widely spoken**.
- The **economy is largely based on agriculture**, which employs over 80% of the workforce.
- **Government**: It is a **republic with a presidential system of government**. It has experienced political transitions and changes in leadership over the years.

## SCIENCE & TECHNOLOGY

## India's first AI school launched in Kerala

- Location: It was launched by Santhigiri Vidhyabhavan in Thiruvananthapuram, Kerala.
- The establishment of this AI school is the result of a collaboration between iLearning Engines (ILE) USA and Vedhik eSchool.
- The school's curriculum aligns with the National School Accreditation Standards, which are based on the New National Education Policy (NEP 2020).
- The school's unique approach centres on deepening students' understanding of Artificial Intelligence (AI) and advanced technologies, enhancing their learning journey.
- It seamlessly integrates AI components such as machine learning, natural language processing, and data analysis into various educational facets like curriculum design, personalised assessments, and student support.

### Features:

- It caters to students from 8 to 12 grade with various multifaceted support services. They will get many benefits like support from a multitude of teachers, different test levels, aptitude tests, career planning, memory techniques and counselling.
- Besides academics, this AI system nurtures the skills like interview techniques, group discussion aptitude, mathematical prowess, writing finesse, etiquette, English proficiency and emotional well-being as well.
- It equips its students to prepare for competitive exams like JEE, NEET, CUET, CLAT GMAT and IELTS for a better higher education.
- It helps students get opportunities at esteemed foreign universities and paves the way for students to pursue their higher studies in foreign countries.

## World Duchenne Muscular Dystrophy Day

- It is observed on the **Seventh of September each year** to raise awareness about Duchenne muscular dystrophy.
- The **purpose of the day** is to support efforts that will improve the quality of life for those who have dystrophinopathies through education, advocacy, and social inclusion.

### *Duchenne Muscular Dystrophy*

- It is a **rare genetic disorder** that results from an **X-chromosome mutation**.
- It was first described by the French neurologist Guillaume Benjamin Amand Duchenne in 1860.
- It is characterised by **progressive muscle degeneration** and weakness due to alterations of a protein called dystrophin that helps keep muscle cells intact.
- It is a multi-systemic condition affecting many parts of the body, that results in the deterioration of the skeletal, heart, and lung muscles.
- It **primarily affects males**, while females are typically carriers.

- **Symptoms**
  - It can begin as early as age 2 or 3, first **affecting the proximal muscles** (those close to the core of the body) and later affecting the distal limb muscles (those close to the extremities).
  - Usually, the lower external muscles are affected before the upper external muscles.
  - The affected child might have difficulty jumping, running, and walking.
  - Other symptoms include enlargement of the calves, a waddling gait, and lumbar lordosis (an inward curve of the spine).
  - Later on, the heart and respiratory muscles are affected as well.
- **Treatments:** Presently available treatments are **gene therapy, exon skipping, stop codon** read-through and gene repair.

### Indian Army introduces the MULE: The AI-based robot system that redefines modern warfare

*Multi-Utility Legged Equipment (MULE)*

- It is an **autonomous load-bearing robot developed for the Indian Army.**
- It has been manufactured **for human-less intervention to locate and eliminate terrorists.**
- **Features:**
  - It is embodied with **360-degree cameras** and **radars** that would help the operator **to detect any threat and use the firing platform to shoot it down.**
  - It is an **analog-faced machine**, built **with four legs** and with a **payload capacity of 12 kg.**
  - The equipment can be **either operated on Wi-Fi or Long-Term Evolution (LTE)**, making it **workable for distances up to 10 km from the location.**
  - It is **controlled by an easy-to-operate remote control.**
  - **A firing platform can also be integrated** into it.
  - It is **capable of taking up projects with pre-fed missions** and is viable to be used in **all terrains**; it can be easily operated in snow and mountains as well.
  - It can **climb mountains hassle-free at upto 45 degrees** and **climb steps as high as 18 cm.**

*North-Tech Symposium 2023*

- It was **jointly organised by the Indian Army's Northern Command, the Society of Indian Defence Manufacturers (SIDM) and IIT-Jammu.**
- The event **comprised exhibitions, product launches**, one-on-one structured interactions, technical seminars, ideas and innovation displays, as well as military equipment displays.

### UK 'closely monitoring' spread of fatal cow disease in Europe

*Epizootic Haemorrhagic Disease (EHD)*

- It is an **insect-born disease caused by a virus** and **affecting wild and**

**domestic ruminant species.**

- It has become an emerging disease in cattle and was **added to the World Organisation of Animal Health list of notifiable diseases in May 2008.**
- It is a **disease of animals, not humans**, so there are **no human or public health issues.**
- The **causative agent, epizootic hemorrhagic disease virus (EHDV)**, belongs to the Orbivirus genus.
- **Transmission: EHDV is transmitted** between ruminant hosts **by Culicoides midges, tiny biting flies commonly known as “no-see-ums”** or gnats that are smaller than mosquitoes and other flies.
- **Clinical signs: Fever, weakness, lack of appetite, more saliva than usual, difficulty swallowing, skin rash** on the udder, **bleeding** (skin and internal tissues), **swollen red skin near hooves**, swollen lining of the mouth, mouth ulcers, **difficulty in breathing and sudden death (particularly in deer).**
- **Treatment: There is no treatment for HD** in wildlife populations and **no commercially available vaccine** to protect against EHD.

### World Lymphoma Awareness Day 2023 Theme

#### *Lymphoma*

- Lymphoma is a **type of cancer** that **originates in the lymphatic system**, which is a **part of the body's immune system.**
- The **lymphatic system includes lymph nodes, lymphatic vessels, the spleen, tonsils, and the bone marrow.**
- Lymphomas are **characterised by the abnormal growth and proliferation of lymphocytes**, a type of white blood cell, which can **form tumourstumors in various parts of the body.**
- It's **considered a blood cancer** because the condition starts in white blood cells (lymphocytes) in your lymphatic system.
- Lymphomas **can be aggressive (fast-growing) or indolent (slow-growing).**
- **It can spread rapidly** from the lymph nodes to **other parts of the body through the lymphatic system.** As cancerous lymphocytes spread into other tissues, **the immune system cannot defend against infections as effectively.**
- There are **two main types of lymphoma:**
  - **Hodgkin Lymphoma (HL):**
    - It is a **relatively rare type** of lymphoma that is **characterised by the presence of Reed-Sternberg cells**, which are **large, abnormal cells found in the affected lymph nodes.**
    - It often **has a predictable pattern of spreading** through the lymphatic system.
  - **Non-Hodgkin Lymphoma (NHL):**
    - It is a **more common and diverse group** of lymphomas that can originate in various lymphatic tissues throughout the body.
    - Unlike Hodgkin lymphoma, **NHL does not involve Reed-Sternberg cells** and **has a more varied and less**



**predictable pattern of growth.**

- **Cause:** The cause of lymphoma is **not fully understood**, but it is thought to be **caused by a combination of genetic and environmental factors.**
- **Signs and symptoms of lymphoma may include:**
  - **Painless swelling of lymph nodes in the neck, armpits or groin**
  - **Persistent fatigue**
  - **Fever**
  - Night sweats
  - Shortness of breath
  - Unexplained weight loss
  - **Itchy skin**
- **Treatment:** The course of treatment **depends on the type of lymphoma** a person has and the stage it has reached. **Common lymphoma treatments include:**
  - **Chemotherapy.**
  - **Radiation therapy.**
  - **Targeted therapy**
  - Immunotherapy
  - CAR T-cell therapy.
  - **Stem cell (bone marrow) transplantation.**

## India Seeks 20 More Doses Of Monoclonal Antibody From Australia To Combat Nipah Virus Outbreak

### *Monoclonal Antibodies*

- Monoclonal antibodies (also called moAbs or mAbs) **are proteins made in laboratories that act like proteins called antibodies in our bodies.**
- **Antibodies are parts of our immune system.** They **seek out the antigens** (foreign materials) and stick to them **in order to destroy them.**
- The word “**monoclonal**” **refers to the fact that the antibodies created in the laboratory are clones.** They are **exact copies of one antibody.**
- **Production:**
  - They are **produced by cloning a single type of immune cell**, known as a B cell, **to generate large quantities of identical antibodies.**
  - This process **creates highly specific antibodies that target a particular antigen**, which could be a virus, bacteria, cancer cell, or other disease-related molecule.
- **Specificity:** They can be **designed to recognise and bind to a particular target molecule with great precision.** This specificity reduces the risk of unintended side effects.
- They are used in a **variety of medical applications**, including the **treatment of cancer, autoimmune diseases**, and infectious diseases.
- **Monoclonal antibodies vs. Polyclonal antibodies:**

- Monoclonal antibodies are **clones of just one antibody**, and they **bind to one antigen only**.
- Polyclonal antibodies **come from several different types of immune cells** and will **bind to more than one antigen**.

#### *Nipah virus*

- Nipah virus infection is a **zoonotic illness** that is **transmitted from animals to humans**.
- **The organism that causes Nipah Virus encephalitis is an RNA or Ribonucleic acid virus** of the **family Paramyxoviridae**, genus Henipavirus, and is closely related to Hendra virus.
- It **first broke out in Malaysia and Singapore in 1998** and 1999.
- It **first appeared in domestic pigs** and has been found in several species of domestic animals, including dogs, cats, goats, horses, and sheep.
- **Transmission:**
  - The disease **spreads through fruit bats**, or 'flying foxes,' of the genus Pteropus, **who are natural reservoir hosts of the Nipah and Hendra viruses**.
  - The **virus is present in bat urine and, potentially, bat faeces**, saliva, and birthing fluids.
- **Symptoms:** Typically, the human infection presents as an encephalitic syndrome marked by **fever, headache, drowsiness, disorientation**, mental confusion, coma, and **potentially death**.
- **Mortality Rate: 40% to 70%**
- **Treatment:** There is **no definitive treatment available** for the virus.

### AI cameras to curb poaching in Madhya Pradesh

#### *TrailGuard AI camera*

- These are **slim devices** that can be inconspicuously set up within the foliage of trees.
- **Features**
  - The system **has embedded software** that can be instructed to take pictures of specific species of interest.
  - It is incredibly small – the head of the camera, along with **the passive infrared sensor**, is only about the size of a person's index finger.
  - It can be **set to specifically capture humans or species** of interest — lions, tigers, cheetahs.
  - If the camera is located in a place within the range of cellphone towers, it can send pictures within 30 seconds.
  - If it is out of this range, it can rely on a longer protocol that can take from 3-10 minutes.
- The 'AI' element, or 'embedded AI' as it is technically known, in this system is that instead of transmitting every image captured, the **camera only sends pictures of interest to forest officials**.
- The product **was developed by RESOLVE**, an international non-profit, in which the operative AI processor is Intel's Myriad chip.

## Scrub typhus claims another life in Odisha

### *Leptospirosis*

- It is a potentially fatal **zoonotic bacterial disease**.
- The disease is caused by a bacterium called **Leptospira interrogans, or Leptospira**.
- It is **more prevalent in warm, humid countries** and in both urban and rural areas.
- It is a contagious disease in animals but is occasionally transmitted to humans under certain environmental conditions.
- The **carriers of the disease** can be either **wild or domestic animals**, including rodents, cattle, pigs, and dogs.
- The cycle of disease transmission begins with the shedding of Leptospira, usually in the urine of infected animals.
- According to the U.S. Centres for Disease Control and Prevention, infected animals can continue to excrete the bacteria into their surroundings for a few months, sometimes up to several years.
- **Leptospirosis may occur in two phases:**
  - After the first phase (symptoms: fever, chills, headache, muscle aches, vomiting, or diarrhoea), the patient may recover for a time but become ill again.
  - If a second phase occurs, it is more severe; the person may have **kidney or liver failure or meningitis**.
- **Treatment:** It can be treated with antibiotics.

## IIT Kanpur develops a new tool to track cyber criminals

### *TTPs*

- TTPs stands for **Tactics, Techniques, and Procedures**.
- It is the term **used by cybersecurity professionals to describe the behaviours, processes, actions, and strategies used by a threat actor to develop threats and engage in cyberattacks**.

### *TTPs-based Cybercrime Investigation Framework:*

- It is a **tool for apprehending cybercriminals' modes of operations in a crime execution lifecycle**.
- It was **developed by the I-hub NTIHAC foundation (c3ihub) at IIT Kanpur with support from the Department of Science and Technology (DST) under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS)**.
- The framework **can help in tracking and classifying cybercrimes, identifying the chain of evidence** required to solve the case and **mapping evidence onto the framework to convict criminals**.
- The technology **can create an approximate crime execution path and suggest a crime path based on user-derived set of keywords**.
- It can also **compare modus operandi (Mode of Operation) used in different crimes, and manage user roles and track activity for crime paths**.
- It could be highly effective as **it restricts the number of forms and methods**

**the investigation can be conducted** and primarily relies on criminals' TTPs. This leads to precise and rapid conviction of cybercriminals.

### New 'string' technology could revolutionise lithium production

#### *String Technology*

- A set of **porous fibres twisted into strings** and engineered to have a water-loving (hydrophilic) core and water-repelling surface.
- When one end is dipped in a salt-water solution, the water travels up the string because of capillary action.
- Then, the water evaporates quickly from the string's surface. This leaves behind **salt ions such as sodium and lithium**.
- The **water will continue to evaporate** like this as the salts become increasingly concentrated, eventually forming sodium chloride and lithium chloride crystals.
- The strings don't just concentrate on the salts. Since lithium and sodium have different physical properties, they crystallise at different locations on the strings.
- Sodium, with its low solubility, crystallises on the lower part, while the highly soluble lithium salts crystallise near the top.

#### *The current method of production*

- A large majority of the lithium produced in the world is extracted from **"brine reservoirs" located in salt flats**.
- Conventional methods of extraction rely on a **series of massive evaporation ponds** that concentrate lithium from saltwater reservoirs and salt flats of underground aquifers.
- This method of production can **require hundreds of square kilometres**, and it often takes months or even years to produce lithium that can be used in batteries.
- It is commercially viable in a few locations around the world.

#### *Lithium*

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

### Brucella Canis, Incurable Dog Disease, Spreads To Humans In UK

#### *Brucella canis*

- It is an **infectious disease caused by the bacteria *Brucella canis***.
- It is **highly contagious between dogs**.
- It can **cause infertility, mobility issues, and discomfort in affected dogs**.
- **Different species of *Brucella* infect sheep, goats, cattle, deer, elk, pigs, and other animals**.
- **Transmission:**
  - **Dogs typically contract *Brucella canis* through contact with infected body fluids**, such as urine, vaginal discharge, or reproductive fluids, **from other infected dogs**.
  - It can be **transmitted to humans through contact with infected bodily fluids**.
- **Symptoms:** It can manifest in various ways and may include symptoms such as **lethargy, fever, swollen lymph nodes, reproductive problems** (such as infertility and spontaneous abortion in females), **joint pain, and testicular swelling** in males.
- **Treatment:**
  - **In dogs, the disease is untreatable**, and government guidelines **advocate for euthanasia** as the recommended course of action.
  - **Infected dogs are typically isolated** to prevent further spread of the disease.
  - **Antibiotics may be prescribed to manage symptoms** and reduce the bacterial load.
  - **However, for humans, effective treatment is available through an extended regimen of antibiotics**.

### **In 1 month, 7 leopard cubs at Bengaluru's Bannerghatta zoo die of feline virus attack**

#### *Feline Panleukopenia Virus*

- It is a highly **contagious viral disease** of cats.
- It is also known as **Feline Distemper**, which is a life-threatening infectious disease.
- It infects and kills the rapidly growing and dividing cells in the body, including cells in the bone marrow, intestines, and skin, and in a developing fetus.
- **Symptoms**
  - Once infected by Feline panleukopenia virus, the **intestine of the animal gets** completely affected.
  - They **develop severe diarrhoea**, vomiting and dehydration, which ultimately leads to death.
  - It spreads faster, and the infected **animal dies within four to five days**.
- **Treatment**
  - There is **no specific treatment** for feline panleukopenia.
  - Dehydration is treated with **aggressive intravenous fluid therapy**, while clinical signs of vomiting and diarrhea are treated with

prescription medications.

- **Antibiotic therapy** is often instituted to help control any secondary bacterial infections due to low white blood cell counts.

### Solar panel breakthrough could supercharge 'miracle material' production

*Perovskite*

- Perovskites are a **class of materials that share a similar structure and display a myriad of exciting properties like superconductivity, magnetoresistance, etc.**
- Crystal Structure:
  - It is a material that **has the same crystal structure as the mineral calcium titanium oxide (CaTiO<sub>3</sub>), the first-discovered perovskite crystal.**
  - It is characterised by a **three-dimensional arrangement of atoms.**
  - It has **the general formula ABX<sub>3</sub>, where "A" and "B" represent cations** (positively charged ions) and **"X" represents anions** (negatively charged ions).
- **Discovery:** The mineral **was discovered in the Ural Mountains of Russia** by Gustav Rose in 1839 and is named after Russian mineralogist Lev Perovski.
- Due to its compositional flexibility, **scientists can design perovskite crystals to have a wide variety of physical, optical, and electrical characteristics** from insulating, semiconducting, metallic, and superconducting characteristics.
- **Optical Properties:**
  - They are known for their **exceptional optical properties.** They can **efficiently absorb and emit light across a wide range of wavelengths,** from visible to near-infrared.
  - This property has **made them a promising candidate for solar cells and light-emitting devices.**
- **Applications:**
  - It includes uses in sensors and catalyst electrodes, certain types of fuel cells, solar cells, lasers, memory devices and spintronics applications.
  - **Solar cells are currently the most prominent perovskite application,** as synthetic perovskites are **recognized as potential inexpensive base materials for high-efficiency commercial photovoltaics.**

### Rashtriya Vigyan Puraskar: Govt Introduced New Set of National Awards in the Field of Science, Tech & Innovation

*Rashtriya Vigyan Puraskar*

- The objective of the award is to **recognize the notable and inspiring contribution** made by the **scientists, technologists, and innovators individually or in teams** in various fields of science, technology and technology led innovation.
- It shall be one of the **highest recognitions** in the field of science, technology,

and innovation in India.

- Scientists/ technologists/innovators **working in government, private sector** organizations or any individual working outside any organization, who have made distinguished contributions in terms of path-breaking research or innovation or discovery in any field of science, technology, or technology- led innovation shall be eligible for the awards.
- **People of Indian Origin** staying abroad with exceptional contributions benefiting the Indian communities or society **shall also be eligible** for the awards.
- The awards shall be given in **following four categories:-**
  - **Vigyan Ratna** (VR) award will recognize lifetime achievements & contributions made in any field of science and technology.
  - **Vigyan Shri** (VS) award will recognize distinguished contributions in any field of science and technology.
  - **Vigyan Yuva-Shanti Swarup Bhatnagar** (VY-SSB) award will recognize & encourage young scientists up to **the age of 45 years** who made an exceptional contribution in any field of science and technology.
  - **Vigyan Team** (VT) award to be given to a team comprising of three or more scientists/researchers/innovators who have made an exceptional contribution working in a team in any field of science and technology.
- It shall be given in the **13 domains**, namely Physics, Chemistry, Biological Sciences, Mathematics & Computer Science, Earth Science, Medicine, Engineering Sciences, Agricultural Science, Environmental Science, Technology & Innovation, Atomic Energy, Space Science and Technology, and Others.
- **Selection procedure:**
  - All nominations received for the Rashtriya Vigyan Puraskar awards shall be placed before the **Rashtriya Vigyan Puraskar Committee** (RVPC) to be **headed by the Principal Scientific Adviser** (PSA) to Government of India and comprising Secretaries of Science Departments, members of Science and Engineering Academies and some distinguished scientists and technologists from different fields of science and technology.
  - The nominations for this awards will be invited every year on 14th January which would remain open till 28th February (National Science Day) every year.
  - These awards shall be announced on 11th May (National Technology Day) every year.
  - The Award Ceremony for all categories of awards will be held on 23rd August (National Space Day).
- All Awards will **have a Sanad & a medal.**
- It will be awarded providing at par status with other National Awards.

### What Is VB\_HmeY\_H4907? The New Virus Found In Pacific In Earth's Oceans

VB\_HmeY\_H4907

- It is a new virus **discovered nearly 11,000 metres below the surface of the**

### **Pacific Ocean.**

- The virus has been **understood as a Bacteriophage, which means 'bacteria eater'**.
- It **infects halophilic bacteria** (bacteria that inhabit environments with high salt concentrations) **from the genus Halomonas**. Such bacteria are **generally found in deep-sea hydrothermal vents**.
- The virus is actually **very genetically similar to its host and is a lysogenic phage, meaning that it inserts its genetic material into the bacteria but usually doesn't kill it**; instead, **both virus and bacteria replicate at the same time**.

### *Bacteriophages*

- Bacteriophages, **also known as phages, are viruses that infect and replicate in bacterial cells**.
- They **also infect the single-celled prokaryotic organisms known as archaea**.
- They were **discovered independently by Frederick W. Twort in Great Britain (1915) and Félix d'Hérelle in France (1917)**.
- They are ubiquitous in the environment and are **recognised as the most abundant biological agent on earth**.
- They are extremely **diverse in size, morphology, and genomic organisation**.
- Like all viruses, phages are simple organisms that **consist of a core of genetic material (nucleic acid) surrounded by a protein capsid**. The nucleic acid may be either DNA or RNA and may be double-stranded or single-stranded.

### **Over 21,000 animals vaccinated against foot-&-mouth disease in Chandigarh**

#### *Foot and Mouth Disease (FMD)*

- It is a **highly contagious viral disease** that **affects cloven-hoofed animals**, including cattle, sheep, goats, and pigs.
- It is a **transboundary animal disease (TAD)** that deeply affects the production of livestock and **disrupts regional and international trade in animals** and animal products.
- It is a **disease of animals, not humans** and is a **different disease than hand, foot, and mouth disease**, which is common in young children.
- **Causative agent**: It is caused by the **foot-and-mouth disease virus**, which is a member of the **Picornaviridae family**.
- **Transmission**:
  - It is primarily **spread through direct contact** between infected animals, **as well as through contaminated feed, equipment, vehicles**, clothing, and the movement of infected animals.
  - It can be **transmitted to humans in rare cases**. Human cases are typically mild and self-limiting, with symptoms similar to other viral illnesses.
- **Symptoms**: Common symptoms in affected animals include **fever, blister-like sores on the tongue, lips**, and inside the mouth, as well as on



the hooves (hence the name "foot and mouth" disease), **excessive salivation**, **lameness**, and **reduced milk** or meat production.

- **Treatment:**

- **Vaccination** is a common method of control for FMD in regions where the disease is endemic or where there is a high risk of outbreaks.
- **Vaccinated animals can still contract the virus**, but the disease's severity is reduced.

### Polycystic ovary syndrome among Indian adolescent girls

- **One in five women** in India grapples with PCOS, with 60% of those seeking infertility treatments doing so due to PCOS-related problems.

#### *Polycystic Ovary Syndrome*

- It is a very common hormone problem for **women of childbearing age**.
- **Symptoms:**
  - Women with PCOS may not ovulate, have **high levels of androgens**, and have many small cysts on the ovaries.
  - It can **cause missed or irregular menstrual periods**, excess hair growth, acne, infertility, and weight gain.
- **Causes:** Genetic predisposition, often marked by a family history of diabetes or obesity, exposed to environments that encourage neither a healthy diet nor regular exercise and are stress-laden.
- **Treatment:** It can be prevented through **lifestyle changes, medications, and fertility treatments**.

### Extreme plankton bloom creates marine 'dead zone' off eastern Thailand

#### *Plankton*

- The word "plankton" comes from the Greek for "**drifter**" or "**wanderer**."
- An organism is considered plankton **if it is carried by tides and currents** and cannot swim well enough to move against these forces.
- The most basic categories divide plankton into two groups: **phytoplankton** (plants) and **zooplankton** (animals).
- **Phytoplankton** are microscopic plants, but they play a huge role in the marine food web.
- Like plants on land, phytoplankton **perform photosynthesis** to convert the sun's rays into energy to support them, and they take in carbon dioxide and produce oxygen.
- **Zooplankton** includes microscopic animals (krill, sea snails, pelagic worms, etc.), the young of larger invertebrates and fish, and weak swimmers like jellyfish. Most zooplankton eat phytoplankton.

#### *Plankton bloom*

- Phytoplankton population explosion occurs **when sunlight and nutrients are abundantly available to the plants**.
- They grow and reproduce to a point where they **are so dense** that their presence changes the colour of the water in which they live.
- Blooms can be quick events that begin and end within a few days, or they

may last several weeks.

- These plants grow so dense that it changes the **colour of the water they live in.**

#### *Gulf Of Thailand*

- It is a shallow inlet of the South China Sea located **in the western part of the Pacific Ocean.**
- It is surrounded by the countries of **Thailand, Cambodia, and Vietnam.**
- The gulf was formerly known as the Gulf of Siam, and in the modern Thai language, the Gulf is referred to as Ao Thai ("Thai Gulf").
- Many notable rivers discharge their freshwater and sediments into the Gulf of Thailand, which include the **Chao Phraya River** along with its distributaries, the **Bang Pakong, the Tha Chin, and the Mae Klong rivers.**

### Scientists find 'missing ingredient' for pink diamonds

#### *Pink Diamond*

- Pink diamonds, also known as fancy pink diamonds, are some of the rarest and most coveted gemstones in the world.
- Pink diamonds have **uniquely bent crystalline structures.**
- More than 90% of all the pink diamonds ever found come from a single mine in the Kimberley region of Western Australia.
- All diamonds are found in pipelike volcanoes or in their eroded remnants.
- **How did they form?**
  - Around 1.8 billion years ago, **Western Australia and Northern Australia collided** in a cataclysmic event.
  - This impact is believed to have been the catalyst that **transformed once-colourless diamonds into their pink variants.**
  - Scientists found that at Argyle, diamonds crystallised deep in Earth's interior were brought to the surface when a supercontinent, Nuna, began to break apart.
  - As continents break up, their edges stretch, allowing small pockets of diamond-rich magma to rise to the surface.

#### *Nuna*

- It is an ancient **supercontinent** that graced our planet's surface.
- Scientists believe Nuna existed **around 1.6 to 2.5 billion years ago**, predating even the famous Pangea by a considerable margin.
- Researchers actively map Nuna's formation by piecing together geological and paleomagnetic data.
- These clues suggest that Nuna brought together fragments of what we now identify as **North America, northern Europe, and parts of Siberia.**
- This supercontinent experienced multiple cycles of coming together and breaking apart. Each phase of assembly and dispersal reshaped the Earth's surface.
- These changes gave rise to new geological formations, laying the groundwork for subsequent continents.
- One of the most intriguing findings about Nuna lies in its connection to

Earth's atmospheric evolution.

- As Nuna formed, volcanic activities increased. These volcanoes released vast amounts of carbon dioxide, playing a pivotal role in shaping the planet's early atmospheric conditions and potentially influencing the course of life.

### What to know about October's 'ring of fire' solar eclipse

#### *Annular solar eclipse*

- It is often referred to as the "**ring of fire**."
- This eclipse **happens when the moon is at or near its farthest point** from Earth in its orbit.
- The moon appears smaller than the sun in the sky and does not fully cover it, creating a striking visual effect.
- The moon appears as a dark disk superimposed on the larger, bright face of the sun, forming a glowing ring or "ring of fire."
- The path of this upcoming eclipse will span several countries in North, Central, and South America.

#### *Types of eclipses*

- **Total solar eclipse:** It happens when the sun, moon and Earth are in a direct line. The dark silhouette of the Moon completely covers the intense bright light of the Sun. Only the much fainter solar corona is visible during a total eclipse which is known as a Totality.
- **Partial solar eclipse:** It happens when the shadow of the moon appears on a small part of the sun.

### Archaeologists unearth largest cemetery ever found in Gaza, with rare lead sarcophagi

#### *Sarcophagus*

- It is an **above-ground stone container for a coffin or dead body** that often is often **decorated with art, inscriptions, and carvings**.
- The **word sarcophagus comes from the Greek "sarx" meaning "flesh," and "phagien" meaning "to eat," so that sarcophagus literally translates as "eater of flesh."**
- **First used in Ancient Egypt and Ancient Greece**, the sarcophagus gradually became popular throughout the ancient world.
- It **carried over through the later years of European society**, often **used for high status members of the clergy, government, or aristocracy**.
- **Features:**
  - They **differ in detail from one culture to another**.
  - They are **almost always made of stone, limestone** being the most popular, but **sometimes of granite, sandstone, or marble**.
  - They were **usually made by being carved, decorated, or constructed ornately**.
  - **Some were built to be freestanding above ground**, as a part of an elaborate tomb or tombs. **Others were made for burial, or were placed in crypts**.

- **Archaeological Significance:**
  - Sarcophagi are important artifacts for archaeologists and historians because they **provide insights into the art, culture, and beliefs of the societies that created them.**
  - The **carvings and inscriptions on sarcophagi often contain valuable historical information.**
- **Example:** The most famous Egyptian sarcophagus is perhaps the **golden sarcophagus of King Tutankhamun.**

### Newly discovered deep-sea enzyme breaks down PET plastic

*Polyethylene Terephthalate (PET)*

- It is the **most commonly used thermoplastic polymer** in the world.
- It belongs to the **family of polyesters.**
- **Production:**
  - PET is produced by the **polymerization of ethylene glycol and terephthalic acid.**
  - **When heated together under the influence of chemical catalysts,** ethylene glycol and terephthalic acid produce PET in the form of a **molten, viscous mass that can be spun directly to fibres or solidified for later processing as plastic.**
- **Properties:**
  - It is **highly flexible, colorless** and **semi-crystalline resin** in its natural state.
  - It shows good **dimensional stability, resistance to impact, moisture, alcohols** and solvents.
  - It exhibits **excellent electrical insulating** properties.
  - It is **very lightweight**, which reduces transportation costs.
  - It **has good gas (oxygen, carbon dioxide) and moisture barrier properties.**
  - **It is recyclable.** It can be commercially recycled by thorough washing and re-melting, or by chemically breaking it down to its component materials to make new PET resin.
- **Applications:**
  - It is widely used for **packaging foods and beverages**, especially convenience-sized soft drinks, juices and water.
  - The polymer finds use in **fabrics, and the textile industry.**
  - It is also **used in films to mold parts for automotive, electronics,** etc.
  - PET's insulating properties and resistance to moisture make it **suitable for various electrical and electronic components, such as insulation** for electrical wires and connectors.

### IISER scientists identify a circular RNA that plays a crucial role in the replication of HIV-1 virus

*Circular RNA*

- Ribonucleic acid is a molecule in living cells that carries genetic information and helps in the production of proteins.
- RNAs are in **general straight-chain**, free-end structures but these circular RNA (**'circRNA'**) **forms a closed-loop**.
- The circRNA plays a pivotal role in regulating **gene expression** and is essential for various biological processes.
- Its role in HIV-1 replication has remained unclear for a long time.
- Characterizing circular RNA can be tricky **because it usually is less abundant**, making it further challenging to detect in the native form.
- During viral infections, there's so much information from the virus that it can make it hard to find the less common ones like circular RNA.

#### *Recent findings*

- The researchers developed a novel approach called **'circDR-Seq'**, to successfully capture circRNAs from **T-cells** (white blood cells) infected with the HIV-1 virus and identified a specific **circRNA named ciTRAN**, which plays an important role in the multiplication of the virus.
- HIV-1 **viral protein R (VpR)** is a multifunctional protein that plays specific roles at multiple stages of the HIV-1 viral life cycle and affects anti-HIV functions of the immune cells.
- Further found that HIV-1 infection induces ciTRAN expression in a Vpr-dependent manner and that ciTRAN interacts with serine/arginine-rich splicing factor 1 (SRSF1), a protein known to repress HIV-1 transcription,"
- **How does this work?**
  - The results suggest that **HIV-1 hijacks ciTRAN** which is generally altered during immunological signaling, inflammation, and viral infection.
  - It further prevents (SRSF1) from doing its job, thereby promoting efficient viral transcription.
  - In addition, researchers demonstrated that an SRSF1-inspired mimic can inhibit viral transcription regardless of ciTRAN induction.
  - The hijacking of a host circRNA thus represents a previously unknown facet of primate lentiviruses in overcoming transmission bottlenecks,

### How a small strand of RNA is key to fighting cancer

#### *microRNA (miRNA)*

- MicroRNAs (miRNAs) are a **class of non-coding RNAs** that play important roles **in regulating gene expression**.
- **Gene expression refers to whether a particular gene is making too much, too little** or the normal **amount of its protein** at a particular time.
- Molecules of miRNA are **found in cells and in the bloodstream**.
- They are **typically composed of approximately 21 to 24 nucleotides**, making them much **smaller than messenger RNAs (mRNAs)**, which carry instructions for protein synthesis. Their small size allows them to bind to specific target mRNAs.
- **How does miRNA control gene expression?**

- miRNA controls gene expression mainly **by binding with messenger RNA (mRNA) in the cell cytoplasm.**
- Instead of being translated quickly into a protein, the **marked mRNA will be either destroyed and its components recycled, or it will be preserved and translated later.**
- So, **if the level of a particular microRNA is underexpressed** (its level in the cell is abnormally low), **the protein it normally regulates may be overexpressed** (its level will be unusually high in the cell\*\*); if the microRNA is overexpressed\*\* (its level is unusually high), **its protein will be underexpressed** (its level will be unusually low).
- **Biological Functions:**
  - They play critical roles in various biological processes, including **development, cell differentiation, proliferation, and apoptosis** (programmed cell death).
  - They are involved in **maintaining cellular homeostasis and responding to environmental cues.**
- **Disease Implications:**
  - **Alteration in miRNA expression results in changes in the profile of genes** involving a range of biological processes, **contributing to numerous human disorders.**
  - With **high stability in human fluids**, miRNAs in the circulation are **considered as promising biomarkers for diagnosis**, as well as prognosis of disease.

### RNA

- RNA, or **Ribonucleic Acid, is a molecule** that plays a central role in various biological processes, particularly in the **transfer of genetic information and the synthesis of proteins.**
- It is a **macromolecule similar to DNA** (Deoxyribonucleic Acid) **in many ways** but differs in its structure and functions.
- RNA is **composed of nucleotide units, just like DNA. Unlike DNA, however, RNA is most often single-stranded.**
- **Function:**
  - The primary function of RNA is to **convey genetic information from DNA and use that information to guide the synthesis of proteins.**
  - This process **involves transcription**, where a complementary RNA strand is synthesized based on a DNA template, **and translation**, where the information encoded in the RNA is used to assemble a specific sequence of amino acids into a protein.

### mRNA

- Messenger RNA (mRNA) is a **type of single-stranded RNA involved in protein synthesis.**
- mRNA is **made from a DNA template during the process of transcription.**
- The role of mRNA is to **carry protein information from the DNA in a cell's nucleus to the cell's cytoplasm**(watery interior), **where the protein-making machinery reads the mRNA sequence and translates each three-base codon into its corresponding amino acid** in a growing protein chain.

- So mRNA really is a **form of nucleic acid which helps the human genome, which is coded in DNA, to be read by the cellular machinery.**

### Dangerous rat-borne disease threatens southeastern US, warn scientists

*Angiostrongylus cantonensis*

- *Angiostrongylus cantonensis*, **commonly known as the rat lungworm**, is a **parasitic nematode (roundworm)** that **infects rodents, particularly rats.**
- It is **typically found in Southeast Asia and the Pacific Islands**, including Hawaii.
- While **rats serve as the primary hosts for this parasite, humans and other animals, including snails and slugs, can become infected** as incidental hosts.
- **Transmission:** It is **spread through rat faeces** and **can infect humans and other animals through produce or other food items.**
- **Impact on Humans:**
  - Once inside a human, the worm could **cause a rare brain infection known as eosinophilic meningitis.**
  - **Symptoms can include headaches, stiff neck, tingling, fevers, vomiting,** or painful feelings in the skin.
  - **Most infections resolve spontaneously over time** without specific treatment because the **parasite cannot survive for long in the human body.**
  - The worm can, in **severe cases, cause coma or even death in humans,** and can **also infect pets.**
- **Treatment:**
  - There is **currently no specific treatment for the parasite.**
  - The most common types of **treatment are for the symptoms of the infection, such as pain medication for headache or medications** to reduce the body's reaction to the parasite.

### From Rajasthan to Haryana, a pest is wreaking havoc on cotton fields

*Pink bollworm (PBW)*

- It is one of the **most destructive pests of cotton.**
- **Distribution:** Originally **native to India**, it is now recorded in nearly all the cotton-growing countries of the world.
- **Description:**
  - The adults are small moths about 3/8 inch long and are dark brown with markings on the fore wing.
  - The larval stage is the destructive and identifiable stage.
  - The larvae **have distinctive pink bands** and can reach a length of ½ inches right before they pupate.
- **Ecological Threat:**
  - Adults lay eggs on cotton bolls; once hatched, the larvae eat the seeds and damage the fibers of the cotton, reducing the yield and quality.
  - When the larvae mature, they cut out the boll and drop to the ground

and cocoon near the soil surface.

- It has also been observed **to attack hibiscus, okra, and hollyhock plants.**
- The PBW larvae **burrow into the developing fruits** (bolls) of cotton plants, and the damage affects both **the weight and quality** of the harvested bolls containing the lint fibre and seeds inside.

## Inside the digital world of cookies

### Internet cookies

- Cookies contain tiny **amounts of data about users in text files** that act like a website's memory.
- As soon as we use a server, tiny amounts of data start getting stored inside a cookie.
- The website **uses it to identify users and their devices**, which also stores these cookies.
- Whenever a user visits the same website, the cookies identify him/her and make it show relevant information.
- **Types of cookies**
  - **Session cookies:** These **are temporary cookies** like post-it notes for websites.
  - They are stored in your computer's memory only during your browsing session. Once you close your browser, they vanish.
  - These can help websites remember your actions as you navigate, like items in your shopping cart.
  - **Persistent cookies:** These are the digital equivalent of bookmarks.
  - They stay on your device after your browsing session ends.
  - Persistent cookies remember your login information, language preferences, and even the ads you have interacted with. They are handy for a more personalised web experience.
  - **Secure cookies:** These are only sent over encrypted connections, making them safer from prying eyes. Secure cookies are often used for sensitive data like login credentials.
- **Uses of cookies**
  - They act as **digital ID cards**, aiding in user authentication by allowing websites to recognise and keep you logged in during your visit.
  - They foster a **sense of personalisation**, recalling your preferences such as language choice or website theme.
  - They function **as the digital equivalent of a persistent shopping cart**, ensuring that items you have added online remain there when you return.

## FMC India launches 'Entazia' biofungicide, a biological solution for crop protection

ENTAZIA



- It is a bio fungicide crop protection product formulated with Bacillus subtilis.
- It was developed by FMC India.
- It will provide farmers with a powerful and sustainable tool to protect their crops from fungi while maintaining environmental integrity.
- Advantages:
- It leverages the natural capabilities of Bacillus subtilis to control bacterial leaf blight, one of the most serious diseases of rice.
- By activating the crop's defence system against plant pathogens, it acts to prevent and control bacterial leaf blight while staying harmless to natural predators and parasites.
- The biological product promotes natural pest defence by utilising the naturally occurring Bacillus subtilis to establish a robust line of defence against bacterial leaf blight.
- By fostering a healthy plant microbiome, it bolsters plants' resilience to stress factors and contributes to overall growth and vigour.
- It can be applied in an integrated pest management program with FMC's bio-stimulants and synthetic fungicides for additional plant benefits.

#### Leaf Blight

- It is a plant disease that affects the foliage (leaves) of various plants, causing discoloration, wilting, and, in severe cases, the death of the leaves.
- It is typically caused by various types of fungi or bacteria that infect and damage the plant tissues.
- Leaf blight can affect a wide range of plants, including trees, shrubs, ornamental plants, and crops.

## IAF chief takes delivery of first C-295 transport aircraft in Spain

### *C-295 MW aircraft*

- It is a transport aircraft of **5-10 tonne capacity**.
- It will **replace** the legacy **Avro aircraft in the Indian Air Force (IAF)** procured in the 1960s.
- It is a versatile and efficient tactical **transport aircraft** which can perform a number of different missions.
- Under the contract, 16 aircraft will come in fly-away condition from Seville, while 40 will be manufactured by Airbus jointly with Tata Advanced Systems Ltd. (TASL).
- **Features**
  - The aircraft, with a **flight endurance of up to 11 hours**, can carry out **multi-role operations under all weather conditions**.
  - It can routinely operate day as well as **night combat missions from desert to maritime environments**.
  - It can also operate on short, unprepared airstrips as it is **capable of Short Take-off and Landing (STOL)**.
  - It has a rear ramp door for quick reaction and para dropping of troops and cargo. Short take-off/land from semi-prepared surfaces is another of its features.
  - It can be converted into **an air tanker** that can deliver up to 6,000 kg of gasoline to fixed and rotary wing receivers by adding a detachable refueling kit.
  - **Airborne Early Warning (AEW):** It has a cutting-edge radar **with 360-degree coverage to give a complete picture** of the airspace in its Airborne Early Warning variant.
  - **Water-Bomber:** The C-295 can be transformed into a powerful water bomber that can put out forest fires with up to 7,000 litres of water due to a flexible roll-on/roll-off system.
  - It is equipped with a close-air-support operation that uses **an Intelligence Surveillance and Reconnaissance (ISR)** with a **multi-mission radar** that can also be weaponised.
- The aircraft can be utilised for **casualty or medical evacuation** as well as airdropping loads and paratroopers.
- It is equipped to handle **special missions, disaster relief operations**, and maritime patrol responsibilities.

## British cruise missiles were used in significant Ukrainian attack on Russian submarine

### *Storm Shadow Missile*

- Storm Shadow/SCALP is a **long-range cruise missile** with **stealth capabilities** jointly **developed by the UK and France**.
- The missile is **intended to strike high-value stationary assets** such as

airbases, radar installations, communications hubs and port facilities.

- **Able to be operated in extreme conditions**, the weapon **offers operators a highly flexible, deep-strike capability** based on a sophisticated mission planning system.
- The Storm Shadow is **also in service with the air forces of Egypt, India, Italy, Greece, Saudi Arabia, Qatar, and the United Arab Emirates (UAE)**.
- **Features:**
  - It is typically **launched from the air**.
  - The missile **weighs 1.3 tonnes** and is just **over 5m long**.
  - Powered by a **turbo-jet engine**, the missile travels at speeds of more than 600mph.
  - It **carries a 450kg conventional warhead** to a **range of up to 200 miles (300km)**.
  - It is equipped with **fire-and-forget technology** and **fully autonomous guidance**.
  - The missile is **fitted with a passive imaging infrared seeker**.
  - The missile is **programmed with every detail of the target and the path to be taken** to reach the target **prior to its launch**.
  - **Once launched, the missile drops to a low altitude to avoid detection** by enemy radar before latching onto its target with the infrared seeker.

## JWST Finds Possible Signs of Life on Exoplanet K2-18 b

### *K2-18b Exoplanet*

- It was first **discovered in 2015**, more than 120 light-years from Earth, during the space agency's K2 mission.
- It is 8.6 times **bigger than Earth**.
- It could be a "Hycean" world with a hydrogen-rich atmosphere and a surface covered by ocean water.
- Now, a new investigation with the Webb telescope has revealed **traces of carbon-bearing molecules in its atmosphere**, including methane and carbon dioxide.

### *James Webb Space Telescope*

- This telescope was built in **collaboration between NASA, the European Space Agency (ESA) and the Canadian Space Agency**.
- It was launched in December 2021.
- It is presently at a point in space known as the Sun-Earth **L2 Lagrange point**, approximately 1.5 million km beyond Earth's orbit.
- Lagrange Point 2 is one of the five points in the orbital plane of the Earth-Sun system.
- It's the largest, most powerful **infrared space telescope ever built**.
- **Objectives:** It will examine every phase of cosmic history, from the Big Bang to the **formation of galaxies**, stars, and **planets** to the evolution of our Solar System.

## Vivek Bhasin assumes charge as BARC director

*Bhabha Atomic Research Centre (BARC)*

- BARC is **India's premier nuclear research establishment**, having its **headquarters in Trombay, Mumbai, Maharashtra**.
- It **operates under the Department of Atomic Energy**, which the Prime Minister of India directly oversees.
- **History:**
  - **Homi Jehangir Bhabha conceived the nuclear program in India.**
  - Bhabha **established the Tata Institute of Fundamental Research (TIFR)** to carry out nuclear science research **in 1945**.
  - **To intensify the effort to exploit nuclear energy** for the benefit of the nation, **Dr Bhabha established the Atomic Energy Establishment, Trombay (AEE), in January 1954 for a multidisciplinary research** program essential **for the ambitious nuclear program of India**.
  - **After the demise of Bhabha in 1966, AEE was renamed Bhabha Atomic Research Centre (BARC).**
- **Functions:**
  - **It is engaged in research** with the objective of generating knowledge and techniques **for nuclear power production, the advancement of nuclear science**, the use of radioisotopes in industry, health and agriculture **and research in frontier areas of science and technology**.
  - It is responsible for the **design and development of nuclear reactors, fuel cycle technologies**, radiation protection, and safety systems.
  - BARC also plays an important role in **nuclear education and training**. It **offers various training programs for scientists, engineers**, and technicians in the areas of nuclear science and technology.

## Rajnath unveils multi-terrain unmanned ground vehicle developed in Pune by Bharat Forge

*Enhanced Collaborative Autonomous Rover System (ECARS)*

- It is a cutting-edge **4x4 multi-terrain unmanned ground vehicle (UGV)**.
- It was **developed by Pune's Kalyani Strategic Systems Ltd**, a fully-owned **subsidiary of Bharat Forge**.
- **Features:**
  - It is **armed with an enhanced collision avoidance system** and **advanced mission planning capabilities**, rendering it a dependable resource for a wide range of military situations.
  - **The speed ranges between 16 and 20 kilometres per hour.**
  - It has a **payload capacity of 350 Kg** and a towing payload capacity of 500 Kg.
  - One of the key features of ECARS is its **compatibility with various systems, including Remote Controlled Weapon Stations (RCWS)**, Water Jet machines, and the **transportation of heavy materials**

**across border** and water channels.

- **Functions: Border surveillance, strategic asset perimeter security**, riot control operations, **CBRN (Chemical, Biological, Radiological, and Nuclear) incidents**, fire-fighting, chemical spraying, and meeting various payload requirements.

*North-Tech Symposium 2023:*

- It was jointly **organised by the Indian Army's Northern Command, the Society of Indian Defence Manufacturers (SIDM) and IIT-Jammu.**
- The **event comprised exhibitions, product launches**, one-on-one structured interactions, technical seminars, ideas and innovation displays, as well as military equipment displays.

### INS Sumedha Participates In 6-Nation Exercise Bright Star

*INS Sumedha*

- INS Sumedha is the **third ship of the indigenously built Saryu class Naval Offshore Patrol Vessels (NOPV).**
- It was indigenously designed and **built by Goa Shipyard Limited.**
- **It was commissioned** into the Indian Navy **on March 7, 2014.**
- It is **part of the Indian Navy's Eastern Fleet, based in Visakhapatnam.**
- **Primary Functions:** To undertake **EEZ surveillance, anti-piracy patrols, fleet support operations**, provide maritime security to offshore assets and carry out **escort operations** for high-value assets.
- **Features:**
  - It has a **displacement of 2,230 tonnes** and measures **105 metres in length** and 12.9 metres in beam.
  - It is fitted with a **state-of-the-art weapon and sensor package.**
  - It **can carry an Advanced Light Combat Helicopter** onboard.
  - The ship is **propelled by two diesel engines**, the **largest of their kind ever deployed in the Indian Navy**, which allow it to **reach a top speed of 25 knots.**
  - With a **range of 6,000 nautical miles (11,000 km) at 16 knots (30 km/h)**, the offshore patrol vessel is suitable for extended missions and operations.

*Exercise Bright Star-23*

- It is a **biennial multinational tri-service exercise.**
- It is **conducted in northern Egypt** and **led by the US and Egyptian armed forces.**
- It is **the largest-ever joint military exercise in the Middle East and North Africa region.**
- Since its **inception in 1980, it has occurred 18 times.**
- **This edition** of the exercise **saw participation from 34 countries, including India.**

### NASA's Juno Mission snaps breathtaking photo of Jupiter, Moon Io

*Juno spacecraft*

- JUNO is an acronym for **Jupiter's Near-Polar Orbiter**.
- It was **launched in 2011**; the Juno spacecraft initially embarked on a 5-year journey to the largest planet in our solar system.
- Towards the end of its primary mission, the spacecraft's objectives evolved, and it transitioned into a full Jupiter system explorer with flybys of Jovian moons.
- **\*\*Goal:\*\*** Understand the origin and evolution of Jupiter, look for a **solid planetary core, map the magnetic field, measure water and ammonia** in the deep atmosphere, and observe auroras.

#### *Moon Io*

- Io is the most **volcanically active** world in the solar system, and it has hundreds of volcanoes that often erupt with molten lava and sulphurous gases.
- It is slightly **larger than the Earth's Moon** and has a diameter that is about one-quarter that of our planet.
- It is **tidally locked to Jupiter**, meaning that one side of the Moon always faces the planet.
- It takes around **1.8 Earth days to both rotate on its axis** and revolve once around Jupiter.
- It has a **very thin atmosphere** that is primarily **made of sulphur dioxide**, but one of the most interesting features of the Jovian moons is its volcanoes.
- The Juno mission has given scientists the closest look at Io since 2007, and it will continue to gather images and science data during even closer flybys later this year and early in 2024.

#### **DRDO's Heavy Drop Parachute System' Gets Bulk Order After Successful Trials**

##### *P-7 Heavy Drop Parachute System*

- It is a **military parachute system** primarily used **for the airdrop of heavy equipment**, vehicles, and supplies from aircraft.
- It was **indigenously designed and developed by the Defence Research and Development Organisation (DRDO)**.
- **Features:**
  - Weighing approximately **500 kg**, the parachute **guarantees the secure delivery of heavy cargo**, even under challenging conditions.
  - It **comprises a platform and a specialised parachute system**, promising to enhance the operational capabilities of the armed forces.
  - It **boasts eight main canopies, three extractor parachutes, one drogue parachute**, and a **suite of electrical, electronic, and mechanical systems**.
  - With a **maximum load-bearing capacity of 8,500 kg** and a **permitted payload limit of 7,000 kg**, the system **operates at drop speeds ranging from 260 to 400 kph**.
  - **Landing Speed: 7 m/sec**
  - **Reusability: 5 times**
  - **Its compact design allows seamless integration onto various**

**aircraft**, including the C-17, C-130, and other cargo aircraft of the IAF, providing versatility in deployment.

### Coast Guard ship Samudra Prahari on overseas deployment to ASEAN countries

#### *Samudra Prahari*

- It is an **Indian Coast Guard Ship (ICGS) specially designed for pollution control.**
- It is the **first pollution control vessel of its kind in Southeast Asia.**
- **Features:**
  - It is equipped with the most **advanced pollution Response and Control equipment for mitigating oil spills in the Exclusive Economic Zone.**
  - It has **tanks and inflatable barges for storage of oil spills.**
  - The ship is capable of unhindered oil recovery operations with a **storage capacity of 500 KL.**
  - The vessel is **designed to operate a twin-engine Advanced Light Helicopter** and to operate **and embark Chetak helicopter.**
  - Special features include an **integrated platform management system**, power management system, **high power external fire fighting system** and one **indigenous gun mount with fire fighting system.**
  - The ship has **unmanned machinery operation capabilities.**

#### *ASEAN*

- The **Association of Southeast Asian Nations (ASEAN)** is a **regional grouping** which was **established in 1967** with the **signing of the Bangkok Declaration.**
- **Founding members: Indonesia, Malaysia, Philippines, Singapore, and Thailand.**
- **Presently, ASEAN comprises 10 member states**, namely Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Laos, Myanmar, Cambodia and Vietnam.
- It **promotes intergovernmental cooperation and facilitates economic, political, security**, military, educational, and sociocultural **integration between its members** and other countries in Asia.
- **Secretariat:** ASEAN Secretariat is located in **Jakarta, Indonesia.**

### Massive eruption from Sun hits Earth, sparks geomagnetic storm

#### *Coronal Mass Ejections (CMEs)*

- CMEs are **large expulsions of plasma and magnetic fields from the Sun's corona** that **propagate outward into interplanetary space.**
- During a CME, the **Sun releases a colossal amount of material, including electrons, protons, and heavier ions, as well as magnetic fields.** This ejected material **travels at high speeds into space.**
- **Causes:**
  - CMEs are typically **triggered by the destabilisation of the Sun's**

- **magnetic fields.**
- The **exact mechanisms are complex**, but they **often involve the reconfiguration or disruption of magnetic loops on the Sun's surface.**
- CMEs are **distinct from solar flares, although they often occur together. Solar flares are sudden and intense bursts of energy and radiation, whereas CMEs involve the expulsion of solar material.**
- **Impact on Earth:**
  - **Geomagnetic Storms:** The interaction between the CME's magnetic fields and Earth's magnetosphere can lead to geomagnetic storms. These can disrupt satellite communications, navigation systems, and even power grids.
  - **Auroras:** CMEs can cause spectacular displays of the Northern and Southern Lights, also known as auroras, by energising particles in Earth's atmosphere.
  - **Radiation Hazards:** Astronauts in space or passengers on high-altitude flights can be exposed to elevated levels of radiation during a CME event.

#### *Solar Flare*

- A solar flare is an **intense burst of radiation coming from the release of magnetic energy associated with sunspots.**
- Flares are our **solar system's largest explosive events.**
- They are **seen as bright areas in the sun**, and they can **last from minutes to hours.**
- In a matter of just a few minutes, **they heat the material to many millions of degrees and produce a burst of radiation across the electromagnetic spectrum**, including from radio waves to x-rays and gamma rays.
- **Although solar flares can be visible in white light**, they are **often more readily noticed via their bright X-ray and ultraviolet emissions.**
- **Effect of Solar Flare on Earth:**
  - The intense radiation emitted during a solar flare **can affect satellite communications, disrupt radio signals**, and even pose a **risk to astronauts in space.**
  - Additionally, the increased solar radiation **can lead to geomagnetic storms**, which may **impact power grids and cause auroras** (northern and southern lights) at lower latitudes.

#### *Geomagnetic Storm*

- A geomagnetic storm is a **major disturbance of Earth's magnetosphere.**
- These storms **result from variations in the solar wind that produce significant changes in the currents, plasmas, and fields in Earth's magnetosphere.**
- **The solar wind conditions** that are effective for creating geomagnetic storms **are sustained (for several hours) periods of the high-speed solar wind and a southward-directed solar wind magnetic field** (opposite the direction of Earth's field) **at the dayside of the magnetosphere.**
- The **largest such storms are associated with solar coronal mass ejections**



(CMEs), where a billion tons or so of plasma from the sun, with its embedded magnetic field, arrives at Earth.

### Defence ministry clears proposal to buy Pralay ballistic missiles for Army

#### *Pralay ballistic missiles*

- It is a quasi-ballistic surface-to-surface missile.
- **Range:** It can hit targets 150-500 km away.
- **Capacity:** The missile can carry 350-700 kg of high-grade explosives.
- It is developed by the **Defence Research Development Organisation (DRDO)**
- It is powered by a **solid propellant rocket motor** and other new technologies.
- The missile guidance system includes state-of-the-art navigation and integrated avionics.
- It can change its path after covering a certain range in mid-air.

#### *Ballistic Missiles*

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

### Coastal Security Drill 'Operation Sajag' Conducted By Indian Coast Guard Along The West Coast

#### *Operation Sajag*

- It is a **coastal security drill conducted by the Indian Coast Guard along the west coast.**
- It **involved all stakeholders** of the Indian coastal security construct.
- **A total of 118 ships, including those from Customs, Marine Police, Ports, and the Indian Navy, participated in the drill.**
- The drill **facilitates revalidation of the coastal security mechanism and brings awareness among the fishermen** at sea.
- During the drill, **extensive checking and verification of documents and crew passes of all fishing boats**, barges and craft at sea was undertaken.
- **Biometric card readers** have also been **issued to security agencies.**
- Besides monitoring of dhows\*\*, island security and community interaction programmes have been institutionalised\*\* under the coastal security construct.

#### *Indian Coast Guard*

- It is an **armed force** that **protects India's maritime interests** and **enforces maritime law**, with **jurisdiction over the territorial waters of India, including its contiguous zone and exclusive economic zone.**
- **History:** it was formally **established in 1978 by the Coast Guard Act, 1978** as an independent armed force of India.
- **Parent ministry:** It operates under the **Ministry of Defence.**

- **Administration:** The organisation is **headed by the Director General Indian Coast Guard (DGICG).**
- **HQ:** New Delhi

### 600 self-neutralising 'Vibhav' anti-tank mines with safety mechanism inducted into Army

#### *Vibhav Anti-Tank Munition*

- It is a **self-neutralising anti-tank mine.**
- Designed and **developed completely indigenously in a joint venture with the Defence Research and Development Organisation (DRDO)** in India, "Vibhav" is a **point-attack anti-tank munition.**
- It is designed to **provide mobility kill against all enemy armoured vehicles.**
- The munition is **under production by the Kalyani Group for the Indian Army.**
- **Features:**
  - The anti-tank mine is **made of new-age plastic**, which gives it **adequate strength and durability** to withstand the requirements of storage, handling and operating in varying field conditions.
  - The munition **can be laid both mechanically or manually.**
  - A **host of safety and actuation mechanisms have been incorporated** in "Vibhav" to **make it safe to handle, lethal against targets** and reliable.
  - The integrated explosive, mechanical and electronic safety features ensure utmost operator safety.
  - The munition **also incorporates an electronic anti-handling and anti-lift device (EAHALD) that stays active for 120 days once armed.**
  - It has **mechanical timers.** Due to this, **after 120 days, it will be self-neutralised.**
  - It has a **storage life of 10 years** with no special storage requirements.

### India's first manned submersible Matsya-6000 to take a dip in Bay of Bengal

#### *Matsya-6000*

- It is a **manned submersible vehicle developed by the National Institute of Ocean Technology (NIOT), Chennai.**
- It was **developed under the Samudrayaan mission** to facilitate humans in the deep ocean in exploring mineral resources.
- It would **make India only one among six countries**(US, Russia, Japan, France, and China) **to have piloted a crewed under-sea expedition beyond 5,000 metres.**
- **Objectives:**
  - It will **look at chemosynthetic biodiversity in hydrothermal vents and low-temperature methane seeps** in the ocean.
  - It will also **promote tourism and ocean literacy.**

- **Features:**
  - It is designed with the capability of **operating in the deep sea for 12 hours, while in case of emergency, it can also operate up to 96 hours** with all the necessary measures for human safety.
  - **Made of 80mm-thick titanium alloy**, it will be able to withstand a **pressure 600 times greater than that at sea level.**
  - It **relies only on gravity, water, and lithium-ion batteries for power.**
  - It will **also feature the ultra-short baseline acoustic positioning system (USBL).** This will allow the mothership carrying the **transponder to send information and the submersible to respond**, which will then let the mothership know where the submersible is.
  - This is a **flotation device that will rise to the top of the ocean** — thus helping to find the submersible even in case it cannot resurface.

#### *Samudrayaan Mission*

- It is **India's first manned mission to explore the deep ocean.**
- It is **designed to study the deep ocean resources and conduct biodiversity assessments as well.**
- The mission **will not disturb the ecosystem as the submersible is used solely for exploration purposes.**
- The project is **part of the larger Deep Ocean Mission, which supports the Central Government's Blue Economy policy.**
- The **Ministry of Earth Sciences (MoES) is the nodal ministry** to implement this multi-institutional ambitious mission.

#### **DAC Approves Proposals Worth Rs 45,000 crore, Including Procurement Of 12 Su-30MKIs**

##### *Dhruvastra Missile*

- It is a **helicopter-launched anti-tank guided missile (ATGM) system.**
- It is a **short-range air-to-surface missile.**
- It was **indigenously developed by the Defence Research and Development Organisation (DRDO).**
- Dhruvastra is the **Air Force's version of Helina (Helicopter-launched Nag missile) ATGM.**
- **Features:**
  - It is **equipped with Imaging Infrared (IIR) seeker and operates in "lock on before launch" mode.**
  - The **fire and forget missile** has a **minimum range of 500 metres** and a **maximum range of 7 kilometres.**
  - It can be **launched from an altitude of up to 4 kilometres** and can **hit targets moving at speeds of up to 70 kilometres per hour.**
  - The missile can **engage targets both in direct hit mode as well as top attack mode.**
  - It **works in all kinds of weather**, during the day or night, **and in various types of terrain**, such as deserts, plains, hills and forests.

##### *Man-Portable Anti-Tank Guided Missile (MPATGM)*

- It is a **man-portable version of the Nag missile**.
- It was **developed by DRDO**.
- It can be **carried and fired by infantry soldiers**.
- The MPATGM **has a range of 2.5 kilometres** and can be **used for short-range anti-tank missions**.

### Solar mission Aditya takes STEPS to collect info on energetic particles from space

#### *Supra Thermal & Energetic Particle Spectrometer (STEPS)*

- It is a **sub-system of the ASPEX** (Aditya Solar Wind Particle Experiment) payload on the spacecraft.
- The key aim of STEPS is to **study the environment of energetic particles** from the spacecraft's position on the L1 point till it will function.
- The data from STEPS in the long term will also help us understand how **space weather changes**.
- It comprises six sensors, each observing in different directions and measuring supra-thermal and energetic ions.
- The data collected during the Earth's orbit helps scientists analyse **the behaviour of particles surrounding the planet**, especially in the presence of its magnetic field.
- It was developed by the Physical Research Laboratory (PRL) with support from the Space Application Centre (SAC) in Ahmedabad.

#### *Aditya L1*

- Aditya (which in Sanskrit means sun) is a planned **coronagraphy spacecraft** to study the solar atmosphere (solar corona, - outermost part).
- It has been designed and **developed by ISRO and various other Indian research institutes**.
- It is the first dedicated Indian mission to observe the Sun and will be launched aboard a **PSLV-XL launch vehicle**.
- The suits of Aditya L1's payloads are expected to provide crucial information for understanding the phenomenon of:
  - coronal heating, coronal mass ejection (CME), pre-flare and flare activities and their characteristics,
  - the dynamics of space weather, propagation of particles and fields, etc.

### Israel unveils next generation artificially intelligent tank

#### *Barak Tank*

- The **Barak, or Lightning**, is a **fifth-generation main battle tank developed by Israel**.
- It was **developed jointly by the Israel Defense Ministry's (IDF) Armored Vehicles Directorate** and the **IDF's Ground Forces** and Armored Corps.
- **Features:**
  - It includes **Artificial Intelligence based sensing and processing capabilities**.
  - The Barak includes **touch screens and an operational application**

store to help with missions.

- **IronVision:**
  - The **tank commander will be equipped with a helmet known as IronVision, resembling those used by fighter jet pilots.**
  - The device would **enable real-time target location using artificial intelligence and 360-degree scanning** via head movement.
  - This will **enable soldiers to overcome inherent visibility challenges**, thereby enhancing mission effectiveness and safety.
- **Weaponry:**
- **It includes a 120mm smoothbore gun.** This gun can fire **high-penetration projectiles** and guided ammunition **at distances of up to four kilometres.**
- The **additional weaponry consists of a pair of 7.62mm machine guns**, an additional 7.62mm machine gun installed on the right side of the turret, and a 60mm mortar.
- It **features the advanced Windbreaker missile defense system.**

### Army likely to complete inducting 114 Dhanush guns by 2026

#### *Dhanush Artillery Guns*

- It is the **first long-range artillery gun to be produced in India.**
- The **155 mm/45-calibre gun system** is a towed howitzer designed **indigenously by the Ordnance Factory Board (OFB).**
- It is an **upgrade of the existing 155 mm, 39-calibre Bofors FH 77 gun.** It is **based on schematics supplied by Bofors/BAE Systems under a technology transfer** agreement concluded in the late 1980s.
- **Features:**
  - It has demonstrated a **range of 38 km with specialised ammunition.**
  - It is **capable of firing eight rounds per minute** and **needs a crew of six to eight artillerymen.**
  - It is **equipped with an inertial navigation-based sighting system, auto-laying facility, onboard ballistic computation,** and an advanced day and night direct firing system.
  - The **self-propulsion unit allows the gun to negotiate and deploy itself in mountainous terrains with ease.**

### 19th Edition of YUDH ABHYAS Set to Commence in Alaska, USA

#### *Exercise Yudh Abhyas*

- It is an **annual exercise conducted** jointly by the Indian Army and the United States Army.
- Indian Army contingent comprising 350 personnel will participate in this edition of the Exercise.
- The lead battalion from the Indian side is affiliated to **MARATHA Light Infantry Regiment.**
- Both sides will practice a series of tactical drills to enhance interoperability in

conducting UN peacekeeping operations.

- The **theme** is '**Employment of an Integrated Battle Group in Mountain/ Extreme Climatic Conditions**' under Chapter VII of the United Nations mandate.
- The scope of the Field Training Exercise includes validation of Integrated Battle Groups against hostile forces at the Brigade level, Integrated Surveillance Grid at the Brigade/ Battalion level, employment of Heliborne/ Airborne elements and Force Multipliers etc.
- The Exercise will also involve exchange of views and best practices in drills on a wide spectrum of combat skills including combat engineering, obstruction clearance, mine and Improvised Explosive Devices warfare.

*Other Exercises between India and USA*

- **Army:** Vajra Prahar
- **Navy:** MALABAR (Multilateral)
- **Air Force:** Cope India, Red Flag (Multilateral)

### Nasa to launch Psyche mission to metal-rich asteroid to find how Earth formed

*Psyche mission*

- The journey to **the asteroid, also named Psyche**, will span **nearly six years** and cover approximately 3.6 billion kilometers.
- The asteroid orbits the **Sun between Mars and Jupiter**.
- It is believed to be a **remnant core of a planetesimal**, composed primarily of iron-nickel metal.
- Studying it from orbit could provide invaluable insights into the **composition of Earth's core**.
- In addition to its primary mission, the Psyche spacecraft will also host a pioneering technology demonstration known as NASA's **Deep Space Optical Communications (DSOC) experiment**.
- This laser communications system aims to **test high-bandwidth optical communications** back to Earth during the first two years of Psyche's journey.
- This experiment could revolutionise how data is transmitted across vast distances in space, potentially enhancing our ability to explore the farthest reaches of the solar system.
- NASA's Jet Propulsion Laboratory is responsible for mission management, operations and navigation.

*Deep Space Optical Communication (DSOC)*

- It is a **sophisticated new laser communication** technology that encodes data in photons at near-infrared wavelengths (rather than radio waves) to communicate between a probe in deep space and Earth.
- Using light instead of radio allows the **spacecraft to communicate more data** in a given amount of time.
- The DSOC team is based at the Jet Propulsion Laboratory.

### Galactic tides: Pushing and pulling the heavens

### Galactic tides

- It is a tidal force experienced by **objects subject to the gravitational field of a galaxy** such as the Milky Way.
- They are **caused by gravitational forces within a galaxy**, arising in the interactions between celestial objects like stars and gas clouds.
- **Effects of Galactic tides**
  - These tidal forces influence various aspects of a galaxy's evolution.
  - They can **reshape a galaxy structure** by creating tidal tails and bridges, promoting star formation, and disrupting smaller star systems.
  - They also **disrupt the orbits of stars**, leading to long-term changes in galactic structure.
  - Galactic tides also have a say in the ways in which proximate galaxies do and don't interact.
  - Researchers have observed the closest galaxy to the Milky Way, the colossal Andromeda, and found that tidal streams near its edges could be signatures of dwarf galaxies that were later devoured.
  - Galactic tides also **affect the supermassive black holes at galaxy centres**, leading to events that change the ways in which these cosmic beasts interact with nearby stars.

### New low-density exoplanet discovered with TESS

#### Transiting Exoplanet Survey Satellite (TESS)

- It is a **NASA mission to discover exoplanets around nearby bright stars**.
- **Launch:** It was launched on **April 18, 2018**, aboard a **SpaceX Falcon 9 rocket out of Cape Canaveral**.
- **Orbit:** TESS circles Earth in a **unique high Earth orbit of 12 to 15 days**, which is **inclined in a way that the telescope's sky view is largely free from obstructions** by our bright planet and the Moon.
- The **prime mission ended on July 4, 2020**, and TESS is **now on an extended mission**.
- TESS is **finding planets ranging from small, rocky worlds to giant planets**, showcasing the diversity of planets in the galaxy.
- **How does TESS find exoplanets?**
  - It **uses the transit method to detect planets**.
  - It **looks for periodic dips in stars' brightness as planets cross in front of them along our sightline**.
  - The **larger the planet, the further the drop in brightness** during the transit.
  - **How long it takes a planet to pass in front of the star and come back tells us the shape of its orbit**.
  - This method **reveals the diameter of the planet and the size of its orbit**. **Orbits within a certain range lie in the "habitable zone"**, where liquid water can exist on the surface of an Earth-like world.

## Armed Forces Tribunal Chandigarh bar association goes on indefinite strike over transfer of judge

*Armed Forces Tribunal (AFT)*

- AFT is a **military tribunal in India established in 2009 under the Armed Forces Tribunal Act, 2007.**
- **Functions:**
  - To provide for the **adjudication or trial of disputes** and complaints **with respect to** commission, appointments, enrolment and **conditions of service in respect of persons subject to the Army Act, 1950, the Navy Act, 1957 and the Air Force Act, 1950.**
  - To provide for **appeals arising out of orders, findings or sentences of courts-martial held under the said Acts** and for matters connected therewith or incidental thereto.
- The Tribunal **can also dismiss the appeal if the court martial findings are found to be justified.**
- **Any appeal** by a person against a decision given by the tribunal **can only be taken up in the Supreme Court.**
- **Benches:** It has its **Principal Bench at New Delhi and eight Regional Benches** at Jaipur, Chandigarh, Lucknow, Guwahati, Kolkata, Chennai, Kochi and Mumbai.
- **Composition:**
  - Each Bench comprises of a **Judicial Member and an Administrative Member.**
  - The **Judicial Members are retired High Court Judges,** and **Administrative Members are retired Members of the Armed Forces who have held the rank of Major General/** equivalent or above for a period of three years or more.
  - **Judge Advocate General (JAG),** who has held the appointment for at least one year, **are also entitled to be appointed as the Administrative Member.**
- **Functioning:**
  - The Tribunal shall transact their proceedings **as per the Armed Forces Tribunal (Procedure) rules, 2008.**
  - **All proceedings** in the Tribunal **will be in English.**
  - The Tribunal **will normally follow the procedure as is practiced in the High Courts of India.**

## NASA's CALIPSO mission stops blasting lasers at Earth after 17 years

*CALIPSO Mission*

- CALIPSO (**Cloud-Aerosol LIDAR and Infrared Pathfinder Satellite Observations**) is a mission **dedicated to studying how clouds and aerosols impact the Earth's climate.**
- It is a **joint project between NASA** (National Aeronautics and Space Administration) **and CNES** (**Centre National d'Études Spatiales**), the **French space agency.**



- **Launched in 2006**, CALIPSO is a **satellite-based observatory**.
- Scientists are using data from CALIPSO to **construct 3D models of the atmosphere** that improve our ability to **predict future climate change**.
- CALIPSO **has been part of a constellation of spacecraft called the "A-Train,"** including Aqua, Aura, and PARASOL spacecraft, **dedicated to studying the Earth's weather** and environment.
- **Instrumentation:**
- It carries **CALIOP, a two-wavelength, polarization-sensitive lidar**, along with **two passive sensors** operating in the visible and thermal infrared spectral regions.
- The **lidar emitted pulses of laser light and measured the amount of light that was scattered back by clouds and aerosols**. This information was used to **create vertical profiles of cloud and aerosol properties**, such as their height, thickness, and optical depth.
- CALIOP is the **first lidar to provide long-term atmospheric measurements** from Earth's orbit.
- This information helps scientists **create three-dimensional profiles** of cloud and aerosol distributions.
- The **mission recorded more than 10 billion LIDAR measurements** and helped create **thousands of scientific reports** over its 17 years of operation.

### Iran launches 3rd military satellite to orbit

#### *Noor-3 Satellite*

- It is an **imaging satellite developed by Iran**.
- It is a satellite with **potential spying capabilities**, boosting Iran's abilities in space.
- It has been **put in an orbit 450 kilometers (280 miles) above the Earth's surface**.
- It was **launched by the three-stage Qased**, or messenger carrier.
- The spacecraft's **two predecessors, Noor-1 and Noor-2, launched in April 2020 and March 2022, respectively, also atop Qased rockets**.
- **Noor-1 fell back to Earth in April 2022, but Noor-2 remains operational** and may work in concert with Noor 3 when the latter satellite comes online.
- **Who carried out the launch?**
  - The launch was carried out by the **aerospace arm of Iran's paramilitary Revolutionary Guard**.
  - The **Guard operates its own space program** parallel to Iran's regular armed forces and **answers only to Supreme Leader Ayatollah Ali Khamenei**.
  - It **launched its first satellite into space in April 2020 (Noor-1)**.

### Army, IAF set to buy 156 more 'Prachand' light combat copters

#### *Prachand attack helicopters*

- It is an **indigenously developed Light Combat Helicopter (LCH)**.
- It is developed by state-run aerospace major **Hindustan Aeronautics Ltd**.

- The **multi-role attack helicopter** has been customized **as per the requirements of the Indian armed forces** to operate both in desert terrains and high-altitude sectors.
- It is the **only attack helicopter in the world that can land and take off at an altitude of 5,000 metres (16,400 ft).**
- **Features:**
  - It is fitted with a **5.8-tonne twin-engine named Shakti engine**, primarily designed **for deployment in high-altitude areas.**
  - Its maximum **speed is 268 kilometres per hour.**
  - It has a **range of 550 kilometres** and **endurance of over three hours.**
  - It has the **best stealth features, armored-shield systems, and dark-mode attack capability.**
  - Its **crash-resistant landing gear** gives it an added edge for better survivability, among other technologies like **radar and IR signature.**
  - **A pressurized cabin** offers **protection from nuclear, biological, and chemical contingencies.**
  - It is equipped with a **countermeasure dispensing system** that protects it from enemy radars or infrared seekers of enemy missiles.
  - The **weapon complement includes a 20mm nose gun in the front**, capable of **firing 800 rounds per minute** from a range of up to 2 km.

### Lucy captures first image of Dinkinesh on its way to ancient asteroids

#### *Dinkinesh asteroid*

- It was discovered in **1999 by the LINEAR survey.**
- Dinkinesh is a slow rotator with a moderately large light-curve amplitude.
- It is an **S-type asteroid, which** means it is composed **mainly of silicates and some metal.**
- It will be the first fly-by target of the Lucy mission on November 1, 2023, during its cruise to the Trojan Clouds.
- The observations were made by Lucy's high-resolution camera, the Lucy **Long Range Reconnaissance Imager** ( L'LORRI instrument ).

#### *Lucy Mission*

- It was launched **by NASA from** the Cape Canaveral Space Force Station in Florida in 2021.
- It is a **12-year mission** which will take close observations **of nine of Jupiter's Trojans** and two main belt asteroids along with that.
- It is the first spacecraft sent to study the **Trojan asteroids**, which orbit the Sun in the same path that the planet Jupiter takes.
- It has recently captured images of **Eurybates, Polymele, Leucus and Leucus asteroids.**

### Indian Navy ships and aircraft arrive in Singapore for SIMBEX 23

#### *SIMBEX 23*

- It is an annual **bilateral Naval exercise** between the Indian Navy and the

Republic of Singapore Navy (RSN).

- It has been **conducted since 1994**.
- It holds the distinction of being the **longest continuous naval exercise** that the Indian Navy has conducted with any other country.
- SIMBEX-2023 is being conducted in two phases - a harbour Phase at Singapore from September 21 to 24, 2023, followed by a Sea Phase.
- Besides Ranvijay, Kavaratti, and Sindhukesari, Long-Range Maritime Patrol Aircraft P8I is also participating in the exercise.
- The Harbour Phase will witness a wide range of professional interactions, cross-deck visits, Subject Matter Expert Exchanges (SMEE), and sports fixtures, aimed at enhancing **interoperability and mutual understanding** between the two navies.
- The Sea Phase of SIMBEX 23 will involve complex and advanced air defence exercises, gunnery firings, tactical manoeuvres, anti-submarine exercises, and other maritime operations.
- Units of both the navies will endeavour to hone their war-fighting skills while consolidating their capability to undertake multi-discipline operations jointly in the maritime domain.

ART & CULTURE

**Hoysala Temples among UNESCO World Heritage Sites: Years of research come to fruition for INTACH Bengaluru**

*Sacred Ensembles of the Hoysala*

- The Sacred Ensembles of the Hoysalas consist of a **collection of Hoysala temples**.
- These were built in the **12th-13th centuries** and are represented here by the three components of **Belur, Halebid, and Somnathapura**.
- The **three temples** include;
  - **The Chennakeshava temple:** It is the main temple in the complex at **Belur** (Hassan district), located at the centre of the traditional settlement, which is surrounded by the remnants of a mud fort and a moat.
  - **The Hoysaleswara Temple:** It is on the banks of the Dwarasamudra tank in **Halebidu** (Hassan district), a town which has many protected and unprotected temples, archaeological ruins, and mounds.
  - **The Keshava Temple:** It is at the centre of **Somanathapura village** (Mysore district).
- These are primarily **dedicated to Hindu deities** like Shiva and Vishnu, with some also devoted to the Jain faith.
- The Hoysala temples have a **basic Dravidian morphology** but show strong influences of **the Bhumiya mode widely used in Central India**, the Nagara traditions of northern and western India, and the Karnataka-Dravida modes favoured by the Kalyani Chalukyas.
- **Features of the architecture:**
  - The Hoysala architects considered and informed eclectic **selections of features from other temple typologies**, which they further modified and then complemented with their own particular innovations.
  - The Hoysala style was created through a careful selection of **contemporary temple features** and those from the past to create a different identity from neighbouring kingdoms.
  - The shrines are characterised by **hyper-real sculptures and stone carvings** that cover the entire architectural surface\*\*, a circumambulatory platform\*\*, a large-scale sculptural gallery, a multi-tiered frieze, and sculptures of the Sala legend.

**French tourist dies after falling from 9-foot-high platform inside Fatehpur Sikri fort**

*Fatehpur Sikri*

- It is a **city predominantly in red sandstone**, situated at a distance of **37 km from Agra, Uttar Pradesh**.
- It was **founded in 1569 by the great Mughal emperor Akbar**, and from

- 1571 to 1585, Fatehpur Sikri was the capital of the Mughal Empire.**
- The **Mughal capital was moved to Delhi in 1586 because of Fatehpur Sikri's inadequate water supply.**
  - It was **designated a UNESCO World Heritage site in 1986.**
  - **Architecture:**
    - The structures in Fatehpur Sikri **combine elements of Persian, Indian, and Central Asian styles.**
    - The structures are **made primarily of red sandstone**, which gives the city its distinctive appearance.
    - It is **enclosed by an 11 km long fortification wall interspersed with numerous gateways.**
    - **Notable buildings in the complex include:**
      - **\*\*Jama Masjid:\*\***It is home to the Jama Masjid, **one of the largest mosques in India.** It is known for its **imposing structure, graceful arches, and intricately designed prayer hall.**
      - **Buland Darwaza:** This colossal **gateway, also known as the "Gate of Magnificence,"** is an iconic monument of Fatehpur Sikri. It was **built to commemorate Akbar's victorious campaign in Gujarat** and is a grand example of Mughal architecture.
      - **Diwan-i-Khas and Diwan-i-Aam:** These are two prominent buildings within the complex. **The Diwan-i-Khas (Hall of Private Audience)** was where Akbar held private meetings, while **the Diwan-i-Aam (Hall of Public Audience) was for conducting public affairs.**
      - **Panch Mahal:** This **five-storied palace** is a unique structure **with open pavilions on each level.** It served as a **place for relaxation and entertainment.**

### **Saved from demolition, Chola-era Manambadi temple set for revival**

#### *Naganathaswamy Temple*

- It was built **by Rajendra Chola I (1012-1044 CE).**
- It is referred **as Kailasamudaiyar temple in inscriptions.**
- **Features**
  - It is known for its exquisite stone sculptures and important inscriptions.
  - It consists of an **ekatala vimana and a mukha mandapa.**
  - The walls of both structures are divided into three bays.
  - The central bays of the vimana have niches to accommodate **Dakshinamurthi in the south, Lingodhbava in the west and Brahma in the north.**
  - The mukha mandapa is provided with three niches on the south and the north.
  - Excellent sculptures of Bikshatana, Adavallan and Ganapathi decorate

the south, whereas Gangadarara, Durga and Ammaiappar are in the north.

- All the niches have well carved and distinctive makara thoranas (ceremonial arches) with relief sculptures in the centre.
- **Inscriptions:** The temple is known for its **important inscriptions** belonging to the periods of **Rajendra Chola I and Kulothunga I** (regnal years 1070-1120 CE).
- **Nine interesting and informative inscriptions** have been recorded from this temple.
- The earliest among them belongs to the fourth regnal year of Rajendra Chola I.
- It refers to a **grant of land free of taxes** by **the nagaratthar of Ilaichikkudi** for raising a flower garden named after the king for the use of the temple.

### 84 artistes conferred with Sangeet Natak Akademi Amrit Awards

#### *Sangeet Natak Akademi Amrit Awards*

- It is a national **honour bestowed on performing artists** as well as teachers and scholars in the field of **performing arts**.
- The recipients are selected by the Akademi's General Council.
- The Akademi's General Council consisted of distinguished musicians, dancers, theatre artists and scholars in these disciplines and nominees of the Government of India, state governments, and Union Territories.
- The honour carries a **purse money of Rs. 1,00,000/-** (Rupees one lakh) besides a **Tamrapatra and Angavastram**.
- The award was constituted to honour Indian **artists aged above 75 years** who have **not been accorded any national honour** in their career so far.

#### *Sangeet Natak Akademi*

- It is India's national academy of music, dance and drama.
- It was created by a resolution of the Ministry of Education, with P.V. Rajamannar as its first Chairman.
- It was **set up in 1953** for the preservation and promotion of the vast intangible heritage of India's diverse culture expressed in forms of music, dance and drama.
- Presently, it is an Autonomous **Body of the Ministry of Culture**.
- The Chairman of the Akademi is appointed by the President of India for a term of five years.
- It is fully funded by the Government for the implementation of its schemes and programmes.

### Tagore's home Santiniketan added to UNESCO World Heritage List

#### Santiniketan

- It is located in the **state of West Bengal**.
- It was established in 1901 by **Rabindranath Tagore**.
- It was a residential **school and centre for art based on ancient Indian traditions**.
- In 1921, a 'world university' was established at Santiniketan, later recognised as '**Visva Bharati**'.
- Visva-Bharati in Santiniketan is Bengal's only central university whose chancellor is the Prime Minister.
- It is distinct from the prevailing British colonial architectural orientations of the early 20th century and of European modernism.
- It **represents approaches toward pan-Asian modernity, drawing on ancient, medieval and folk** traditions from across the region.

#### *UNESCO World Heritage*

- A World Heritage Site (WHS) is a **landmark or area with legal protection** by an international convention administered by UNESCO under **the UNESCO**

**World Heritage Convention, established in 1972.**

- These sites are designated by UNESCO for having cultural, historical, scientific or other forms of significance.
- **Categorisation of Sites – The sites are categorised in three types:**
  - **Cultural heritage sites**– It includes historic buildings and town sites, important archaeological sites, and works of monumental sculpture or painting
  - **Natural heritage sites**– It includes those natural areas that have excellent ecological and evolutionary processes, endangered species etc.
  - **Mixed heritage sites**– It contain elements of both natural and cultural significance.
- India has **41 world heritage sites**, including 33 cultural properties, 7 natural properties and 1 mixed site.

**Prime Minister greets people on Nuakhai**

*Nuakhai Juhar*

- It is an important social festival of Western Odisha and adjoining areas of Simdega in Jharkhand.
- The word **nua means new**, and **khai means food**.
- **\*\*Objective:\*\***It is an agricultural festival which is observed to welcome the new rice of the season.
- It is observed on **the fifth day of the lunar fortnight** of the month of Bhadrapada or Bhadra (August–September), the day after the Ganesh Chaturthi festival.
- **What are the rituals?**
  - Nuakhai is understood to **have nine colours**, and as a consequence, nine sets of rituals are followed as a prelude to the actual day of celebration.
  - People offer the **newly harvested crop called Nabanha** to their respective presiding deities.
  - After offering the Nabanha, people relish different types of delicacies prepared from the newly harvested crop.
  - The Nuakhai Juhar is a major ritual of the festival.

**Shivraj Singh Chouhan Unveils Adi Shankaracharya Statue In Madhya Pradesh**

*Adi Shankaracharya*

- Adi Shankaracharya, or **Shankara**, as he was known, was an **ancient Indian philosopher and theologian** who lived in the **early 8th century CE**.
- **Birth:** He was **born in Kalady**, a village in **present-day Kerala**.
- **Philosophical Contributions:**
  - He is best known for his role in the development and **propagation of Advaita Vedanta**, a non-dualistic school of Hindu philosophy.
  - He **amalgamated the ideologies of 'Advaita Vedanta'** and also **explained the basic ideas of Upanishads**.



- **His most important work is his efforts to synthesize the six sub-sects, known as 'Shanmata.'** 'Shanmata', which literally translates to 'six religions,' is the **worship of six supreme deities.**
- Shankaracharya **explained the existence of one Supreme Being (Brahman)** and that **the six supreme deities are part of one divine power.**
- He also **founded 'Dashanami Sampradaya,'** which **talks about leading a monastic life.**
- While Shankaracharya was a firm believer in ancient Hinduism, **he condemned the 'Mimamsa school of Hinduism',** which was purely based on ritual practices.
- **Four Mathas:** He **established four prominent monastic centers in India,** each associated with one of the cardinal directions: **Sringeri in the south, Dwarka in the west, Puri in the east, and Badrinath in the north.**
- **Commentaries and Writings:**
  - He **wrote 18 commentaries** on major religious scriptures like the **Bhagavad Gita, Brahmasutras, and 12 major Upanishads.**
  - His **review of 'Brahma Sutra' is known as 'Brahmasutrabhasya',** and it is the oldest surviving commentary on 'Brahma Sutra'.
  - He **wrote 23 books on the principles contained in the Advaita Vedanta** philosophy, including **Viveka Chudamani, AtmaBodha, Vakya Vritti, Upadesa Sahasri, etc.**
  - **72 devotional hymns** and meditational hymns like **Soundarya Lahari, Nirvana Shatakam, Maneesha Panchakam.**
- **Death:** Adi Shankaracharya is **believed to have attained Samadhi** (a state of deep meditation or realization) **at the young age of 32 in Kedarnath in the Himalayas.**

#### *Advaita Vedanta*

- It refers to the **non-dualistic school of Hindu philosophy.** It is a **subschool of Vedanta,** which itself is one of six orthodox schools of Hindu philosophy.
- It is **derived mostly from the Upanishads** and elaborated in detail by eminent scholars like **Sri Adi Shankaracharya and Gaudapada.**
- Dvaita means duality, and **Advaita means nonduality.** It **emphasizes the fundamental oneness or non-duality of all existence.**
- It **posits that the ultimate reality, known as Brahman, is the only true, unchanging, and absolute reality.**
- **Everything else, including the individual self (Atman), the material world (Prakriti), and the gods, is ultimately an illusion (maya) or a temporary manifestation of Brahman.**
- In other words, there is **no fundamental distinction** or separation **between the individual self and the ultimate reality.**
- **Jiva (Individual Soul):** In Advaita Vedanta, the individual soul or jiva is **seen as an expression of Brahman** temporarily bound by the limitations of the physical body and mind.
- **Moksha (Liberation):**

- Liberation (moksha) is achieved **when the jiva realizes its essential identity with Brahman.**
- Moksha is the **ultimate goal of Advaita Vedanta.**
- It is the **liberation from the cycle of birth and death** and the realization of one's true nature as Brahman.
- Moksha is **attained through self-realization (atma-jnana)** and the **removal of ignorance (avidya).**
- Advaita Vedanta **offers various paths to realization, including Jnana Yoga** (the path of knowledge), **Bhakti Yoga** (the path of devotion), and **Karma Yoga** (the path of selfless action).
- While Advaita Vedanta teaches that the world is ultimately an illusion, **it acknowledges the relative reality of the empirical world and encourages individuals to fulfill their worldly duties (dharma)** while seeking spiritual realization.

### Promotion of Tribal Products for North East Region (PTP-NER 2.0)

*Promotion of Tribal Products for North East Region' (PTP-NER 2.0) scheme:*

- It is a **Central Sector scheme** which was launched by the Ministry of Tribal Affairs.
- **Vision:** To strengthen livelihood opportunities for tribal artisans through increased efficiency in procurement, logistics and marketing of tribal products.
- It will be **implemented in** the States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim.
- It is being implemented in two phases:
  - In the **First Phase** of the scheme, 8 states and 38 districts were covered. Organisation of 64 **Tribal Artisans Empanelment Melas (TAeM)** were done by the teams of TRIFED and North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC).
  - In the Second Phase of the scheme, 29 districts will be covered by the teams of TRIFED and NEHHDC to reach out to tribal artisans and showcase their cultural heritage.
- **Implementing Partners:** North Eastern Handicrafts and Handlooms Development Corporation (NEHHDC), India Post under the Department of Posts, and other North Eastern State Government Departments/ Agencies.
- **India Post** will provide **logistics support** in order to meet the scheme's goals.

### Tamil Nadu's Shore Temple India's First Green Energy Archaeological Site

*Shore Temple*

- It is a historic temple complex located **in Mamallapuram (Mahabalipuram), Tamil Nadu.**
- It is dedicated to **Lord Shiva and Lord Vishnu.**
- It was probably built during the reign of **Narasimhavarman II**, also known as Rajasimha (Pallava ruler), who reigned from 700 to 728 CE.
- Shore Temple is one of a number of Hindu monuments at Mahabalipuram, on

the **Coromandel Coast of Tamil Nadu**.

- It is one of the **oldest structural excellence** (rock-cut) stone temples in South India.
- The Mamallapuram monuments and temples, including the Shore Temple complex, were collectively designated a **UNESCO World Heritage site in 1984**.

#### UNESCO

- UNESCO stands for United Nations Educational, Scientific, and Cultural Organisation.
- It is a specialised agency of **the United Nations (UN)**.
- The constitution, which entered into force in 1946, called for the promotion of international collaboration in education, science, and culture.
- **Headquarters:** Paris, France.
- **Parent Organisation** United Nations Economic and Social Council
- **Goal:** The primary goals of UNESCO are to contribute to peace and security by promoting collaboration among nations through education, science, and culture and to promote sustainable development and intercultural dialogue.

### New Indo-European Language Discovered in Ancient City of Hattusa

#### *Indo-European Languages*

- The Indo-European Languages are a **family of related languages** that today are **widely spoken in the Americas, Europe, and also Western and Southern Asia**.
- **The hypothesis** that this was so **was first proposed by Sir William Jones, who noticed similarities between** four of the oldest languages known in his time: **Sanskrit, Latin, Greek, and Persian**.
- The **common ancestral (reconstructed) language is called Proto-Indo-European (PIE), which is no longer spoken**.
- There is **disagreement as to the geographic location where it originated from, with Armenia and the area to the north or west of the Black Sea being prime examples of proposed candidates**.
- The Indo-European family of languages is **the second-oldest in the world, only behind the Afroasiatic family** (which includes the languages of ancient Egypt and early Semitic languages).
- It **has the largest number of speakers** of all language **families as well as the widest dispersion around the world**.
- **The various subgroups** of the Indo-European family include:
  - **Indo-Iranian languages (includes Sanskrit, Hindi, Bengali, Persian)**
  - **Italic languages** (including Latin and its descendants, the Romance languages)
  - **Germanic languages**
  - Celtic languages
  - Baltic languages
  - Slavic languages
  - Illyrian languages (extinct)

- Albanian language (and extinct cousins)
- **Anatolian languages** (extinct; most notable was the language of the Hittites)
- Tocharian languages (extinct tongues of Tocharians)
- Greek language
- Armenian language
- Some of the most commonly spoken Indo-European Languages in the modern world are **Spanish, English, Hindustani, Portuguese, Russian, Punjabi**, and Bengali.

### Indian scientist Swati Nayak named World Food Prize's Norman E Borlaug Award winner

*Norman E. Borlaug Award:*

- The award recognises **exceptional scientists under 40** and someone who works in the field of food and nutrition security and hunger eradication.
- It is given in memory of the Nobel awardee and Green Revolution's chief architect **Dr Norman Borlaug**.
- The award will honour an individual who is working closely and directly “in the field” or at the **production or processing level with farmers, animal herders**, fishers or others in rural communities in any discipline or enterprise across the entire food production, processing, and distribution chain.
- The award diploma incorporates the image of Dr. Borlaug at work in the fields of Mexico **and a cash prize of \$10,000**.
- It is **endowed by the Rockefeller Foundation and will** be presented every October in Des Moines, Iowa, by the World Food Prize Foundation.
- **Other Indian recipients:** Aditi Mukherji (2012) and Mahalingam Govindaraj (2022).

*Contributions of Swati Nayak*

- She introduced **Sahbhagi Dhan'**, a drought-tolerant variety rice suitable for hilly uplands, and '**BINA Dhan-11'**, which is flood-tolerant.
- **BINA-Dhan-11'**, which contains a **submergence-tolerant Sub1 gene** identified from an indigenous land race of Odisha.
- The Sub1 gene has been incorporated into many existing popular high-yielding varieties such as 'Samba Mahsuri', 'Swarna' and 'Ranjit'.
- There are, likewise, other drought-tolerant varieties, such as 'DRR Dhan 42' and 'DRR Dhan 44'.

### Dadasaheb Phalke Award conferred on Waheeda Rehman

*Dadasaheb Phalke Award*

- It is India's highest award in the **field of cinema**.
- It is presented annually at the **National Film Awards** ceremony by the Directorate of Film Festivals, an organisation set up by the Ministry of Information and Broadcasting.
- The recipients are recognized for their '**outstanding contribution** to the growth and development of **Indian cinema**'.

- The award comprises a **Swarna Kamal** (Golden Lotus) medallion, a shawl, and a **cash prize of 10 lakh rupees**.
- The award was introduced by the Government of India to commemorate Dadasaheb Phalke's contribution to Indian cinema, who is popularly known as and often regarded as "the father of Indian cinema".
- It was first presented in 1969. The first recipient of the award was **actress Devika Rani**, "the first lady of Indian cinema."

### A dictionary to save a language from extinction

#### *Toto language*

- It is a **Sino-Tibetan language** spoken by the tribal Toto people and is written in the Bengali script
- A prominent community **member Dhaniram Toto developed a script** as recently as in 2015.
- It is **spoken by** barely 1,600 people living in parts of **West Bengal bordering Bhutan**.

#### *Toto Shabda Sangraha*

- The dictionary has **been compiled by Bhakta Toto**, a bank employee-cum-poet, and published jointly by the trust and Bhasha Samsad
- The dictionary is a step in the direction of **preserving the language**, alive so far only orally, by putting its vocabulary in print.
- Toto words, to be **translated into Bengali and English**, will be composed in the Bengali script, considering that the Toto script is still in a nascent stage and members of the tribe are more familiar with the Bengali script.

### TRIFED's Artisanal Treasures Steal the Spotlight at G20 Summit

#### *TRIFED's Artisanal Treasures*

- **Longpi Pottery:**
  - Named after the village of **Longpi in Manipur**, the **Tangkhul Naga tribes practice** this exceptional pottery style.
  - Unlike most pottery, Longpi **does not resort to the potter's wheel**.
  - All shaping is done with the hand and with the help of moulds.
  - The characteristic grey-black cooking pots, the stout kettles, quaint bowls, mugs, and nut trays, at times with a handle of fine cane, are trademarks of Longpi.
- **Chhattisgarh Wind Flutes:**
  - Curated by the **Gond Tribe of Bastar** in Chhattisgarh, the '**Sulur**' **bamboo** wind flute stands out as a unique musical creation.
  - Unlike traditional flutes, it produces melodies through **a simple one-handed twirl**.
  - Beyond music, the 'Sulur' serves utilitarian purposes, helping tribal men ward off animals and guide cattle through jungles.
- **Gujarat Hangings:**
  - It is curated by the **Bhil & Patelia Tribe in Dahod, Gujarat**.
  - They boast mirror work, zari, stones, and beads, evolving to suit

contemporary fashion while preserving tradition.

- **Rajasthan Artistry**

- **Glass Mosaic Pottery** captures the mosaic art style, meticulously crafted into lampshades and candle holders. When illuminated, they unleash a kaleidoscope of colours, adding vibrancy to any space.
- **Meenakari:** It is the art of decorating metal surfaces with vibrant mineral substances, **a technique introduced by the Mughals.** Delicate designs are etched onto metal, creating grooves for colours to nestle in. Each hue is fired individually, creating intricate, enamel-adorned pieces.
- **Metal Ambabari Craft:** It is curated **by the Meena Tribe** and also embraces enamelling, a meticulous process that elevates metal decoration. Today, it extends beyond gold to metals like silver and copper.

**FACTS FOR PRELIMS**

**Assam-based oncologist among winners of 2023 Ramon Magsaysay Award**

*Ramon Magsaysay Award*

- It is Asia's premier prize and the highest honour celebrates the greatness of spirit and transformative leadership in Asia.
- The Ramon Magsaysay Awardees, annually selected by the RMAF board of trustees, are presented with a certificate and a medallion with an embossed image of Ramon Magsaysay facing right in profile.
- From 1958 to 2008, the Award was given in six categories annually:
- Government Service: To recognise outstanding service in the public interest in any branch of government, including the executive, judicial, legislative, or military;
- Public Service: To recognise outstanding service for the public good by a private citizen;
- Community Leadership: To recognise leadership of a community toward helping the disadvantaged have fuller opportunities and a better life;
- Journalism, Literature, and Creative Communication Arts: To recognise effective writing, publishing, or photography or the use of radio, television, cinema, or the performing arts as a power for the public good;
- Peace and International Understanding: To recognise contributions to the advancement of friendship, tolerance, peace, and solidarity as the foundations for sustainable development within and across countries; and
- Emergent Leadership: To recognise an individual, forty years of age or younger, for outstanding work on issues of social change in his or her community but whose leadership may not yet be broadly recognised outside of this community.
- It is presented in formal ceremonies in Manila, Philippines, on August 31st, the birth anniversary of the much-esteemed Philippine President whose ideals inspired the Award's creation in 1957.

Indian winners on the list

- Prominent Indians who have won the award include Vinoba Bhave in 1958, Mother Teresa in 1962, Kamaladevi Chattopadhyay in 1966, Satyajit Ray in 1967, and Mahasweta Devi in 1997.
- In recent years, Arvind Kejriwal (2006), Anshu Gupta of Goonj (2015), human rights activist Bezwada Wilson (2016), and journalist Ravish Kumar (2019) have won the award.

**Deadly earthquake in Morocco damages heritage sites**

*High Atlas Mountains*

- The High Atlas Mountains **are a prominent mountain range in North Africa, primarily located in Morocco.**

- **Location:**
  - The High Atlas Mountains are **part of the Atlas Mountain Range**, which stretches **across Morocco, Algeria, and Tunisia**.
  - It **extends northeastward for 1000 km from the Atlantic Coast to the Moroccan-Algerian border**.
- **Geography:**
  - They are characterised by their **rugged and steep terrain**.
  - They are known for their **high peaks, deep valleys, and extensive plateaus**.
  - The range includes **several peaks over 4,000 metres** (13,000 feet) in elevation, with **Mount Toubkal being the highest at approximately 4,167 metres** (13,671 feet).
- **Cultural Significance:** They have cultural significance in Morocco. The region is **inhabited by Berber communities**, and traditional **Berber villages can be found throughout the mountains**.
- **Climate Divide:** Its saw-toothed Jurassic **peaks act as a weather barrier between the mild Mediterranean climate to the north and the encroaching Sahara to the south**.

#### *Morocco*

- It is located in the **northwest corner of Africa** and is **bordered by the North Atlantic Ocean and the Mediterranean Sea**.
- **Land Borders:** It shares land borders with **Algeria to the east and southeast and Western Sahara to the south**.
- The **High Atlas Mountains separate the mild coastline from the harsh Sahara**.
- **Sahara Desert:** A **significant part of Morocco is covered by the Sahara Desert**.
- **Climate:** Morocco has a **diverse climate**, ranging from the **Mediterranean along the coast to desert in the interior**. The country experiences **hot summers and mild winters in most regions**.
- It was a **French protectorate between 1912 and 1956**.
- **Capital:** **Rabat**, which is located on the Atlantic coast.
- **Largest City:** **Casablanca** is the largest city in Morocco and serves as its economic and business hub.
- **Official Languages:** **Arabic and Amazigh (Berber)** are the official languages of Morocco. **French is also widely spoken** and used in business and government.
- **Government:**
  - Morocco is a **constitutional monarchy with an elected parliament**.
  - **King Mohammed VI has been the reigning monarch since 1999**.

### **India, Saudi Arabia Agree to 'Accelerate' \$50 Billion West Coast Refinery Project**

#### *West Coast Refinery Project*

- First **conceptualised in 2014**, the West Coast refinery **project, also known**



as the **Ratnagiri Refinery and Petrochemicals Ltd. (RRPCL)**, was envisioned as **India's largest greenfield refinery** with a **capacity of 60 million tonnes per annum** and is touted to become the **largest integrated refinery and petrochemical facility in the world**.

- **Location:** As the name implies, the project is supposed to be set up on **India's western coast**, specifically in **Ratnagiri, Maharashtra**.
- The refinery is expected to **produce around 1.2 million barrels of oil a day** when completed, **alongside the various petroleum products** that will be produced by attached petrochemical plants.
- **Three of India's leading government-owned public sector undertakings** in the oil and gas sector **came together in a joint venture partnership called RRPCL**.
- **RRPCL is a 50:25:25 joint venture formed in 2017** by India's three national oil companies, **Indian Oil Corporation Limited (IOCL), Bharat Petroleum Corporation Limited (BPCL), and Hindustan Petroleum Corporation Limited (HPCL)**.
- **In 2019, Saudi Aramco and the Abu Dhabi National Oil Company (ADNOC)** decided to get involved as well, **collectively acquiring a 50 percent stake in the project**, which is estimated to be **worth around Rs 3 lakh crore purely in set-up costs**.

### **DEPwD Launches Transformative Programs to Empower persons with Disabilities**

- **MOU with Council of Architecture:**
  - Department of Empowerment of Persons with Disabilities (DEPwD) has joined hands with the **Council of Architecture (COA)** to introduce universal accessibility courses within **Bachelor of Architecture programs**.
  - This collaboration extends to the **development of a certified course** for architects and civil engineers, equipping them with the skills to conduct accessibility audits in built environments, thereby ensuring compliance with accessibility standards.
- **Releasing of Anonymous Data of UDID:**
  - DEPwD's release of anonymous data **through the Unique Disability ID (UDID)** portal for research purposes represents a significant leap in **data-driven decision-making** within the disability sector.
  - This initiative provides invaluable insights at various levels, facilitating a deeper understanding and informing targeted interventions.
- **PM Daksh Portal:**
  - It is a **comprehensive digital platform designed** to empower Persons with Disabilities in their pursuit of **skill training and employment opportunities**.
  - The portal offers seamless registration through UDID, access to location-based skill training options, a wide array of job listings from across India, and streamlined administrative processes.
- **Pathways to Access:**

- **Courts on Disability Rights:** DEPwD has compiled notable judgements from India's Supreme Court and High Courts concerning disability rights into a comprehensive booklet.
- This resource serves as a **valuable reference guide for persons with disabilities** and stakeholders in the disability sector.
- **Online Case Monitoring Portal by CCPD:**
  - The **Chief Commissioner for Persons with Disabilities** (CCPD) has adopted a cutting-edge application for **handling grievances** filed by persons with disabilities.
  - This initiative streamlines the entire process, making it paperless and efficient. Key features include seamless online complaint filing, automated reminders, and simplified hearing scheduling.

### **Invasive red fire ants found for the first time in Italy could spread across Europe, says study**

#### *Red Fire Ants*

- **Red imported fire ants**, commonly known as **fire ants**, are a **species of stinging ants native to South America**.
- **Scientific Name: Solenopsis invicta**
- They are **known for their aggressive behavior, painful stings**, and large colony sizes. The ant can **also damage crops and local ecosystems**.
- **Features:**
  - They are **reddish-brown to reddish-black in color**, with a **characteristic coppery head**.
  - They are **small ants**, typically ranging from **1/8 to 1/4 inch (3-6 mm) in length**.
  - Their **bodies are segmented**, with a **distinct two-part thorax**.
  - **Stinging Behavior:** They are **infamous for their painful stings**. They **have a potent venomous sting** that can **cause intense burning and itching sensations** in humans.
  - **Colony Structure:**
    - Fire ant colonies are **organized and highly structured**. They consist of **thousands to hundreds of thousands of ants and multiple queens**.
    - Unlike many ant species that have a single queen, fire ant colonies are **polygynous, meaning they have multiple reproductive queens**.

### **Speed records in sight as revamped Buddh International Circuit all set to host Moto GP Bharat**

#### *MotoGP*

- The MotoGP, or **Grand Prix Motorcycle Racing**, is the **premier motorcycle championship in the world**.
- It is the **oldest motorsport championship** in the world, with the **first-ever annual competition being held in 1949**.

- **The governing body for MotoGP is the Fédération Internationale de Motocyclisme (FIM).**
- **Races:**
  - It is a **non-stop race** from start to finish, **without any pit stops.**
  - **Each race lasts between 40 and 45 minutes over a distance of between 100 and 130 km,** depending on the circuit.
- **Engine Capacity:**
  - **Earlier labelled to the “500 cc” category only, in 2002,** this oldest motorcycle championship underwent a **change and increased the engine capacity to 990cc.**
  - Again in 2007, the rules were altered, limiting the engine capacity to 800 cc, **which was again changed to 1000 cc in 2012.**
- The **championship sees multiple races** around the world in a **season that goes from March until November.**
- The championship is **run on Points basis. Points are won by each Rider** (finishing 1st, 2nd, 3rd till the 15th position) **and each Team (Team Championship) and Constructor (Constructors' Championship).**

*MotoGP 2023:*

- The **2023 season has 11 teams and 22 riders** - two riders from each team.
- This season **has 21 Grand Prix races in 2023** around the world. **One of these locations this season is India.**
- **Where is the Moto GP race in India?**
  - Moto GP Bharat this year **will be hosted at the Buddh International Circuit in Noida, Uttar Pradesh.**
  - It is a **five-kilometre-long track with a width of 12 metres.**
  - This **track has 16 corners,** 8 being left-hand corners and 8 being right-hand corners.
  - **The longest straight on this track is 1006 metres.**

**Now, India can issue internationally accepted OIML certificate for selling weights and measures**

*OIML*

- The OIML, which stands for **International Organisation of Legal Metrology,** was established in 1955.
- It is an international **standard-setting body.**
- It develops model regulations, standards, and related documents for use by legal metrology authorities and industry.
- It plays a crucial role in **harmonising national laws and regulations** on the performance of measuring instruments like clinical thermometers, alcohol breath analysers, radar speed measuring instruments, ship tanks found at ports, and petrol dispensing units.
- **India became a member** of the OIML in 1956. In the same year, India signed the metric convention.
- **Headquarter:** Paris

*OIML certificate*

- It is a system for **issuing, registering and using OIML certificates** and their associated OIML-type evaluation/test reports for instruments like digital balances, clinical thermometers, etc.
- With the addition of India, the number of countries authorised to **issue OIML certificates has increased to 13.**
- **Other certificate-issuing countries:** Australia, Switzerland, China, Czech Republic, Germany, Denmark, France, United Kingdom, Japan, Netherlands, Sweden, and Slovakia.
- It is a single certificate accepted worldwide.
- Indian domestic manufacturers can now **export their weighing and measuring instruments worldwide** without incurring additional testing fees, resulting in significant cost savings.

### Engineers' Day 2023: Internet honours Sir M Visvesvaraya, celebrates engineers

*Sir M Visvesvaraya*

- Mokshagundam Visvesvaraya, widely known as Sir MV, **was a distinguished engineer, statesman, and scholar who held the position of Diwan of Mysore from 1912 to 1918.**
- He was **known as the father of Modern Mysore** for his outstanding contribution to society.
- **Birth:** He was born on **15th September 1861** in Muddenahalli village in **Karnataka.**
- **Education:** He completed his Bachelor of Arts (BA) from the University of Madras and completed **civil engineering from the College of Science in Pune.**
- **Contributions:**
  - He was the **chief engineer responsible for the construction of the Krishna Raja Sagara Dam in Mysore.**
  - He **designed and patented automatic water floodgates in 1903,** which were **first installed at the Khadakwasla reservoir in Pune.**
  - **In 1917, Visvesvaraya established the Government Engineering College in Bengaluru,** which was later named **University Visvesvaraya College of Engineering** in his honour.
  - He was a **renowned precursor of economic planning** in India.
- **Awards:**
  - **In 1955,** the Government of India **honoured him with the highest civilian honour — Bharat Ratna** for his numerous industrial, economic and social projects.
  - He was also **conferred the British knighthood by King George V,** earning the title "**Sir.**"

*Krishnaraja Sagar (KRS) Dam*

- **Location:** It is **located below the confluence of river Kaveri with its tributaries, Hemavati and Lakshmana Tirtha,** in the district of Mandya in **Karnataka.**

- It is a type of **gravity dam**.
- **Usage:**
  - The water from the Dam is used for **irrigation in Mysore and Mandya** and is the **main source of drinking water for Mysore, Mandya and Bengaluru city**.
  - It also ensures **power supply to the Shivanasamudra hydroelectric power station**.
  - The **water released from this dam flows into** the state of **Tamil Nadu and is stored in the Mettur dam** in the Salem district.
- **History:**
  - The dam was **constructed during the rule of the Maharaja of Mysore, Krishnaraja Wadiyar IV, and it was named in his honour**.
  - The construction of the KRS Dam **began in 1911 and it was completed in 1931**.
  - The dam was **designed by Sir M. Visvesvaraya, a famous Indian engineer**.
- **Features:**
  - It was **built using a mixture of surki mortar and limestone**.
  - It is **2,621 meters (8,600 ft) long and 40 meters (130 ft) high**.
  - Its **reservoir is about 130 Sq. Kms, which was the largest in Asia at the period** when it was built.
  - **Brindavan Gardens**, an ornamental garden, is **attached to the dam**.

## UNDP India partners with NABARD to boost data-driven innovations in agriculture

*DiCRA*

- **Data in Climate Resilient Agriculture (DiCRA)** is a collaborative **digital public good** which provides open access to key geospatial datasets pertinent to climate resilient agriculture.
- It is **curated by UNDP** and partner organisations to inform public investments in agriculture and already provides intelligence on climate resilience for 50 million hectares of farmland across India.
- It is guided by the digital public good principles of open access, open software, open code, and open APIs.
- It uses cutting-edge **data science and machine learning to identify farms** that are resilient to climate change and those that are highly vulnerable.
- **Advantages**
  - By partnering to enhance and scale its use, NABARD will host and maintain the DiCRA platform and use its key geospatial datasets for policymaking, research, and development activities, with UNDP's technical support.
  - This five-year technical cooperation is envisaged to **foster collective climate action and create innovative platforms** and new product offerings to enhance economic empowerment in rural India.
  - Such open data innovations can highlight best practices, optimise

agriculture investments and shelter populations from risk.

### 14th edition of World Spice Congress begins in Navi Mumbai

*World Spice Congress (WSC)*

- It was planned and conceived in 1990 as a forum for discussion and interaction between the importers and exporters of spices.
- It is the **conglomeration of the global spice industry** that has become the most apt platform to deliberate the concerns and considerations of the sector over its three-decades-long presence.
- Since its inception, it has been Organized **under the leadership of the Spices Board, Ministry of Commerce and Industry**, Government of India.
- The **theme of the WSC 2023 is VISION 2030: S-P-I-C-E-S**, which stands for sustainability, productivity, innovation, collaboration, excellence and safety.

*Spices Board of India*

- It was constituted on 26th February 1987 under **the Spices Board Act 1986** with the merger of the erstwhile Cardamom Board (1968) and Spices Export Promotion Council (1960).
- It is functioning under **the Ministry of Commerce & Industry**.
- It is responsible for the export promotion of the 52 scheduled spices and the development of Cardamom (Small and large).
- The Board is a link between the Indian exporters and the importers abroad.
- **Main Functions**
  - Research, Development and Regulation of domestic marketing of Small & Large Cardamom
  - Post-harvest improvement of all spices
  - Promotion of organic production, processing and certification of spices
  - Development of spices in the North East
  - Provision of quality evaluation services

### Boat carrying 32 children capsizes in Bagmati river in Bihar's Muzaffarpur

*Bagmati River*

- It is a **transboundary river** between **Nepal and India**.
- **Origin:** It rises in **the Shivapuri Hills** to the north of Kathmandu and flows southward through the city.
- It passes across the Kathmandu Valley, which is situated in Nepal.
- It gets divided from Kathmandu through Patan, passing via Province No. 2 of the Southern region of Nepal that eventually seeps into the Bihar state of India.
- This river is assumed to be sacred by a pair of religions, Hindus as well as Buddhists.
- **Major tributaries** – Bishnumati, Hanumante, Dhobikhola and Tukucha, Origin
- The River ultimately joins the Narayani River, located in southern Nepal.
- The merged waters of **the Bagmati and Narayani** eventually make their way

southward and into the Ganges.

### **Yashobhoomi: PM Modi inaugurates first phase of International Convention and Expo Centre**

*Yashobhoomi*

- 'YashoBhoomi' or **India International Convention and Expo Centre (IICC)** is a **state-of-the-art modern convention centre** located in **Dwarka, New Delhi**.
- It will be **among the world's largest MICE** (Meetings, Incentives, Conferences and Exhibitions) **destinations**.
- It **has a magnificent Convention Centre, multiple Exhibition halls** and other facilities.
- **Features:**
  - The project covers a total area of over 8.9 lakh square metres with a **total built-up area of more than 1.8 lakh square metres**.
  - **Cost:** The project is developed around a cost of **Rs 5400 crores**.
  - The **Convention Center, built across more than 73 thousand square metres** of area, **comprises 15 convention rooms**, including the Main Auditorium, the Grand Ballroom **and 13 meeting rooms with a total capacity of holding 11,000 delegates**.
  - It **has the largest LED media facade in the country**.
  - **The plenary hall in the Convention Center** is equipped with a **seating capacity of around 6,000 guests**.
  - **The exhibition halls are built across over 1.07 lakh square metres** of area suitable for hosting exhibitions, trade fairs and business events.
  - It is **equipped with a state-of-the-art wastewater treatment system** boasting **100 per cent wastewater reuse** and **provisions of rainwater harvesting**.

### **Ministry of Environment, Forest and Climate Change celebrates 29th World Ozone Day**

*World Ozone Day*

- World Ozone Day, or **International Day for the Preservation of the Ozone Layer**, is observed **annually on September 16**.
- It is celebrated every year **to spread awareness** among people **about the depletion of the Ozone Layer and the measures taken/ to be taken to preserve it**.
- The **theme for World Ozone Day 2023** is **"Montreal Protocol: fixing the ozone layer and reducing climate change"**.
- **History:**
  - **In 1994, the UN General Assembly proclaimed 16 September** the International Day for the Preservation of the Ozone Layer, **commemorating the date of the signing, in 1987, of the Montreal Protocol** on substances that deplete the Ozone layer.

- The **protocol was signed on September 16, 1987, in Montreal, Canada**, to address the depletion of the ozone layer.

#### *Montreal Protocol*

- It is an **international treaty that aims to phase out the production and consumption of ozone-depleting substances, primarily chlorofluorocarbons (CFCs), halons, carbon tetrachloride, and other chemicals.**
- These substances were **commonly used in refrigeration, air conditioning, and aerosol propellants.**
- **Kigali Agreement:**
  - It is an **amendment to the Montreal Protocol.**
  - It was **adopted on October 15, 2016, in Kigali, Rwanda, as an extension of the Montreal Protocol.**
  - While the original Montreal Protocol focused on phasing out ozone-depleting substances, the Kigali Amendment **addresses the phase-down of Hydrofluorocarbons (HFCs), which are used as replacements for those ozone-depleting substances.**
  - The primary goal of the Kigali Amendment is to reduce the production and consumption of HFCs, **with the aim of mitigating their contribution to global warming.**

#### *Ozone*

- Ozone is a **gas made up of three oxygen atoms (O<sub>3</sub>).**
- It is **both a natural and a man-made product that occurs in the Earth's upper atmosphere (the stratosphere) and lower atmosphere (the troposphere).**
- **Ozone in the stratosphere, known as the "ozone layer," occurs naturally and forms a protective barrier that prevents ultraviolet sunlight (UV-B) radiation from the sun from reaching the Earth's surface and harming plant and animal life. This is commonly referred to as "good ozone."**
- **Tropospheric or ground-level ozone** – what we breathe – is **formed primarily from photochemical reactions between two major classes of air pollutants: volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>).**
- **At ground level, high concentrations of ozone are toxic to people and plants.**

### **Rare metal Vanadium discovered along the Gujarat coast**

#### *Vanadium*

- It is a **chemical element with the symbol "V" and atomic number 23.**
- It is a **silver-gray, ductile, and malleable metallic element.**
- It is **harder than most metals** and exhibits **good corrosion resistance against alkalis and acids.**
- **History:**
  - It was **discovered (1801) by the Spanish mineralogist Andrés Manuel del Río, who named it erythronium** but eventually came to believe it was merely impure chromium.



- The **element was rediscovered (1830)** by the Swedish chemist **Nils Gabriel Sefström, who named it after Vanadis, the Scandinavian goddess** of beauty and youth.
- The **English chemist Henry Enfield Roscoe first isolated the metal in 1867** by hydrogen reduction of vanadium dichloride.
- **Occurrence:**
  - Found **combined in various minerals, coal, and petroleum**, vanadium is the **22nd most abundant element in Earth's crust**.
  - It is **found in over 60 different minerals, including vanadinite, carnotite, roscoelite, and patronite**.
  - The **largest resources** of vanadium minerals **are found in South Africa and Russia**.
- **Leading Producers: China, South Africa, and Russia.**
- **Applications:**
  - **Alloys:**
    - One of the primary uses of vanadium is **as an alloying element in steel and other metals**.
    - **Vanadium steel**, for example, is **known for its strength, toughness, and ability to maintain hardness at high temperatures**. It is commonly **used in tools, cutlery, and structural materials**.
  - In **Vanadium Flow Batteries (VFBs)**, vanadium is used **to create a reliable, safe and stable solution for the storage of renewable energy**.
  - **Chemical Catalysts:** Vanadium compounds are **used as catalysts in various chemical reactions, such as the production of sulfuric acid**.
  - **Nuclear Applications:** Vanadium is used in some nuclear reactors **as a structural material and neutron moderator**.
  - In the **medical sphere**, vanadium is used to **treat a number of ailments, including diabetes, heart disease and high cholesterol**.

#### *Gulf of Khambhat*

- It is an **inlet of the Arabian Sea** along the west coast of India, **in the state of Gujarat**.
- **Earlier, it was known as the Gulf of Cambay**.
- Stretching for **about 80 miles**, it **divides the Kathiawar Peninsula from the south-eastern part of Gujarat**.
- **Rivers:** The **Narmada, Tapti, Mahi, and Sabarmati rivers** drain into it.
- **Geography:**
  - It is a **relatively shallow and enclosed body of water, characterized by its tidal movements and extensive mudflats**.
  - It is **known for having one of the highest tidal ranges in the world**, with tides that can rise and fall dramatically.
  - There are **some coral reefs around small inlets in the western part of the Gulf**.

## New marine tardigrade species named after former President A.P.J. Abdul Kalam

### *Batillipes Kalami*

- This newly discovered species from Mandapam in southeast Tamil Nadu belongs to the **genus Batillipes**.
- It is the **second marine tardigrade to be discovered in Indian** waters and the first one from the east coast.
- It is also the **first taxonomically described** species belonging to **the genus Batillipes from India**.
- It is the **37th species** of the genus Batillipes.
- **Features**
  - Size-wise it averages 170 micrometres (0.17 mm) in length and around 50 micrometres (0.05 mm) in width.
  - It has a trapezoid-shaped head **with sharp-tipped filament-like appendages** (cirri) extending from it.
  - All four pairs of legs possess sensory spines of varying lengths.
  - The **females are slightly bigger** compared to the males.

### *Tardigrades*

- Tardigrades are extremely **tiny animals** whose size is measured in micrometres.
- Their microscopic size, however, belies their toughness.
- They are known for their **extraordinary resilience and survival instincts**.
- Studied using microscopes, these water-dwelling animals are also **known as 'water bears.'**

## In Arunachal, a parlour for yak milk

### *Nyukmadung Dairy*

- It is located at the farm of the Indian Council for Agricultural Research-National Research Centre on Yak.
- The farm in the West Kameng district is about 25 km from Dirang, where the yak research centre is situated.
- **Objective:** To make yak farming more remunerative by making yak milk and its diverse derivatives popular.

### *Yak*

- The yak (**Poephagus grunniens**) is the lifeline of highland ethnic communities living in the **Himalayan and trans-Himalayan regions**.
- **Distribution:** It is found on the heights of Arunachal Pradesh, Sikkim, Himachal Pradesh, and Ladakh.
- The animal sustains the livelihood of the highlanders by yielding milk, meat, fibre, hide, and dung apart from being used for transportation.
- Yak milk and milk products are the **integral components of the diet of these** highland communities thriving in an extremely hypoxic and harsh environment without vitamin and mineral supplements.
- Yak milk is creamy white, thick, sweetish, fragrant, and richer in protein,

fat\*\*, lactose, minerals, and total solids than cow milk.\*\*

- In general, yak milk is considered naturally concentrated milk enriched with a higher **nutrient density** and loaded with **omega-3 fatty acids**, amino acids, and antioxidants.

### **NIA lists 43 from terror-goon network with links to Canada**

*National Investigation Agency (NIA)*

- NIA functions as the **Central Counter Terrorism Law Enforcement Agency of India**.
- It **also aims to set the standards of excellence in counter-terrorism** and other national security-related investigations at the national level with an oriented workforce.
- **Parent Ministry: Union Ministry of Home Affairs.**
- **Establishment:** NIA was **created after the 2008 Mumbai terror attacks** with the **enactment of the National Investigation Agency Act 2008**.
- **Jurisdiction:**
  - The agency is empowered to **deal with terror-related crimes across states without special permission from the states**.
  - It **works under a written proclamation from the Ministry of Home Affairs**. The NIA ensures effective and speedy trials in the cases.
  - **A State Government may request the Central Government to hand over the investigation of a case to the NIA**, provided the case has been registered **for the offences as contained in the schedule of the NIA Act**.
  - The **Central government can ask the NIA to take over the investigation of any scheduled offence anywhere** across the nation.
  - According to the National Investigation Agency (Amendment) Act, 2019, **officers of the NIA will have the power to investigate scheduled offences committed outside India, subject to international treaties and domestic laws** of other countries.
- **Offices:**
  - While the **headquarters is situated in New Delhi**, NIA has several **12 Branch offices across the country**.
  - The other branches are based in Hyderabad, Guwahati, Kochi, Lucknow, Mumbai, Kolkata, Raipur, Jammu, Chandigarh, Ranchi, Chennai and Imphal.

### **NMC of India has been recently awarded World Federation for Medical Education (WFME) Recognition status for a tenure of 10 years.**

*World Federation for Medical Education (WFME)*

- WFME is a **global organisation concerned with the education and training of medical doctors**.
- WFME's **mission is to strive for better health care** for all mankind.
- WFME's **primary objective is to enhance the quality of medical education worldwide**, with the promotion of the **highest scientific and ethical**

**standards in medical education.**

- This objective is **met through**
  - The **development of standards** in medical education;
  - The **promotion of accreditation** of medical schools;
  - The **development of databases** on medical education;
  - **Projects on the future of medicine** and medical education;
  - **Publications and partnerships**
- It was **founded in 1972** and is **headquartered in Ferney-Voltaire, France.**
- It is the **organisation that officially and globally represents medical teachers and medical teaching institutions before the World Health Organization(WHO).**
- WFME's **accreditation program** plays a pivotal role in **ensuring that medical institutes meet and uphold the highest international standards** of education and training
- **Importance of WFME Recognition Status to NMC:**
  - It will **enable Indian medical graduates to practice or pursue post-graduation in countries** including the US, Canada, Australia, and New Zealand, **where WFME recognition is a prerequisite.**
  - **All 706 existing medical colleges** in India have **received WFME accreditation. Any new medical colleges established in the next 10 years will also automatically gain WFME accreditation status.**
  - It will **enable the commission to enhance the quality and standards of medical education** in India by aligning it with global best practises and benchmarks.
  - It will **also augment the international recognition and reputation of Indian medical institutions** and professionals, **foster academic collaborations** and exchanges, and promote ongoing improvements and innovation in medical education.

*National Medical Commission (NMC)*

- NMC is a **statutory body established under the National Medical Commission Act, 2019.**
- The NMC **replaced the erstwhile Medical Council of India (MCI)**, which was established in 1934.
- **Functions:**
  - NMC **regulates medical education and medical professionals.**
  - The Commission **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.
- **Headquarters: New Delhi**
- **Organisational structure of NMC:**
  - It **consists of 33 members, including 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.

### General Crop Estimation Survey GCES App Portal

General Crop Estimation Survey Portal

- This revolutionary portal and mobile application have been designed to transform agricultural practices across the nation.
- It has been **developed by Department of Agriculture and Farmers' Welfare.**
- It has been developed for leveraging technology to enhance the reach, scope, and outcome of government actions in the course of development.
- The automation of the GCES process will ensure on time reporting of crop statistics and accuracy of the data.
- **Key Features**
  - **Comprehensive Information:** The portal and the app provide a comprehensive repository of yield estimation including village wise GCES plan and plot details where the crop cutting experiments are conducted, post harvesting crop weight and drilage weight of the crop.
  - **Geo-referencing:** It is one of the key features of the mobile application, which enables the primary worker to draw **the boundary of the experimental plot and upload photos of the plot** as well as of the crops through it. This feature will ensure transparency and accuracy of the data as well.

### 16 More Gates Of Odisha's Hirakud Dam Opened; Excess Water Being Released Through 22

*Hirakud Dam*

- Hirakud Dam is **built across the Mahanadi River**, about 15 kilometres from Sambalpur **in the state of Odisha.**
- It is the **longest earthen dam in the world**, about **16 miles and around 26 km in length.**
- The dam **forms a vast reservoir known as the Hirakud Reservoir or Hirakud Lake.** It is the **biggest artificial lake in Asia.**
- **History:**
  - It is one of the first multipurpose projects undertaken by India after independence.
  - The **construction began in 1948** and was **completed in 1953.**
  - It was **built to control the flow of the Mahanadi River** and **manage the perennial problem of floods** in the region.
  - **The inauguration** of the dam was done by the then **Prime Minister Jawaharlal Nehru in 1957.**
- **Purpose:**
  - **Irrigation facility to 1,08,385 hectares of Rabi crops** and **1,55,635 hectares of Kharif crops** in Bolangir, Subarnapur, Bargarh, and

- Sambalpur.
- The **capacity of power generation** installed at Hirakud dam is **359.8 MW**.
  - **More than 436,000 hectares of land in the Mahanadi delta also get irrigated** by the water which is released from the powerhouse.
  - **The delta area in Cuttack and Puri districts**, which covers an area of 9500 sq Km, also **gets flood protection** because of the Hirakud Project.
  - **Structure:**
    - **Granite, hard concrete, and earth** are the most used substances **in building the dam**.
    - **Stretched from the Chandidungri hills on the right to the Lamdungri hills on the left**, the **main structure** of Hirakud Dam is **about 4.8 km long**.
    - About 83400 sq. km. is the catchment area, and the **dam is a composite structure of Concrete, Masonry and Earth**.
  - **Cattle Island:**
    - It is a **small island** in the Hirakud Reservoir.
    - It is **inhabited by a large herd of wild cattle**, which are believed to be the **descendants of cattle that were left behind by villagers** when the dam was constructed in the 1950s.

#### *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**.
- 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**.
- **Length:** It flows a total of **860 km** by distance before it **ends up in the Bay of Bengal**.
- **Tributaries:** The main tributaries of Mahanadi are **Seonath River, Jonk River, Hasdeo River**, Mand River, Ib River, Ong River and Telen River.

#### **Department of Fisheries is promoting Artificial Reef (AR) under PMMSY for rejuvenating coastal fisheries**

##### *Artificial Reefs (AR)*

- An artificial reef is a **manmade structure** that **may mimic** some of the **characteristics of a natural reef**.
- These are **engineering technology interventions** used to rehabilitate and/or improve natural habitats, increase **productivity, and manage aquatic resources**, including habitat enhancement (FAO, 2015).
- Materials used to construct artificial reefs have included rocks, cinder blocks, and even wood and old tyres, which come in an infinite number of shapes and styles.

- The projects are being implemented with the technical support of **the Fisheries Survey of India (FSI)** and **ICAR-Central Marine Fisheries Research Institute (CMFRI)**.
- **Advantages of AR**
  - It boosts marine biodiversity.
  - It encourages fish population growth.
  - It reduces pressure on natural reefs.

#### **What is the Pradhan Mantri Matsya Sampada Yojana?**

- It is a flagship scheme for **focused and sustainable development** of the **fisheries sector** in the country, with an estimated investment of Rs. 20,050 crores for its implementation during a period of 5 years from FY 2020-21 to FY 2024-25 in all States/Union Territories.
- **What are the aims of the scheme?**
  - It aims at enhancing fish production by an additional 70 lakh tonnes by 2024-25.
  - Increasing fisheries export **earnings to Rs.1,00,000 crore by 2024-25.**
  - Doubling the incomes of fishers and fish farmers, reducing post-harvest losses from 20-25%.
- **Nodal Ministry:** Ministry of Fisheries, Animal Husbandry and Dairying

#### **A Reminder As Water Level In Jhelum Drops Below Zero Mark**

##### *Jhelum River*

- It is a river that **flows in India and Pakistan.**
- It is a **tributary of the Indus River.**
- The Jhelum (**Vyeth in Kashmiri, Vetesta in Sanskrit** and Hydaspes in Greek) is the **main waterway of the Kashmir valley.**
- It is the **largest and most western of the five rivers of Punjab** and **passes through the Jhelum District** in the North of Punjab province, Pakistan.
- **Course:**
  - **Origin:** It originates **at the Verinag Spring at Anantnag**, at the foot of the **Pir Panjal range in the Kashmir Valley.**
  - It **then flows via Srinagar and Wular Lake** prior to entering **Pakistan.**
  - The river **makes a deep, narrow gorge on its way to Pakistan.**
  - It **joins the Chenab River near Trimmu, Pakistan.**
  - **Length:** It has a total length of about **725 km (450 mi).**
- **Major Tributaries:**
  - The **largest tributary of the Jhelum is the Kishenganga (Neelum) River**, which **joins near Muzaffarabad and enters the Punjab province, Pakistan.**
  - **Kunhar River is the second largest** tributary of the river, which **connects Pakistan-occupied Kashmir (PoK) and Pakistan on the Kohala Bridge of Kangan Valley.**
  - **Other tributaries include Sandran River, Bringi River, Arapath**

**River**, Watlara River, Lidder River and Veshaw River.

### Oil price on the rise: Can Crude breach the \$100 mark

#### *Brent Crude*

- It serves as the most **widely used benchmark that defines oil prices around the world.**
- The term "**Brent**" refers to the **Brent oil field**, which was **discovered in the 1970s** and became a significant source of oil production.
- **About two-thirds of all internationally traded crude oil supplies are priced relative to Brent**, making it the most widely used marker of all.
- It is a **light, sweet crude oil extracted from** different oil fields in the **North Sea.**
- Its unique properties, **low density and low sulphur content**, make Brent crude oil **simpler to process into products such as gasoline.**
- As its **supply is water-borne**, Brent crude oil **is easy to transport to distant locations.**
- The Brent Crude oil **price is influenced by various factors, including supply and demand dynamics, geopolitical events**, production disruptions, and economic factors.

#### *Sweet Crude*

- It refers to **crude oil that is extracted** that is found to **contain very low amounts of sulfur.**
- **Sulfur is undesirable** in crude oils because it **lowers the yield of high-value refined products**, including gasoline and plastics.

#### **Other Oil Benchmarks:**

- **West Texas Intermediate (WTI)**
- **Dubai Crude**

### Docking of first ship at Vizhinjam port to be delayed by 10 days

#### *Vizhinjam International Seaport*

- **Location:** It is located at **Vizhinjam, a coastal town in Thiruvananthapuram District, Kerala.**
- It is designed primarily to **cater to container transshipment besides multi-purpose and break bulk cargo.**
- It is **developed in a landlord model with a Public Private Partnership component on a design, build, finance, operate and transfer ("DBFOT") basis.**
- The **private partner, the Concessionaire M/s Adani Vizhinjam Port Private Limited** has, commenced the **construction on 5th December 2015.**
- The Port is **merely a 10 NM diversion from the international east-west shipping route** and is also **close to the national/regional road and rail network.**
- There **would be about 30 berths**, most of which would be **capable of handling Mother Vessels.**
- **Significance:**



- It is the **only transshipment hub in the Indian subcontinent, closest to the international shipping routes**, and is centrally located on the **Indian coastline**.
- **Around 95 per cent of India's foreign trade is conducted through the sea route**. In value terms, this works out to **70 per cent of the foreign trade**.
- **Nearly 30 percent of the freight movement takes place through the international shipping route** South of the Indian peninsula, which passes **10 nautical miles off Vizhinjam**.
- Currently, **India does not have a deep-water container transshipment terminal and depends on Colombo, Singapore and Salalah ports**.
- This results in a **significant loss of foreign currency and revenue, estimated to be about Rs 2,500 crore a year**.

### 5th World Coffee Conference in Bengaluru from Sept 25 to 28

#### *International Coffee Organization*

- It was established in 1963 under the aegis of the United Nations and following the approval of the **first International Coffee Agreement in 1962**.
- The ICO is the **only intergovernmental organization** for coffee, bringing together exporting and importing Governments.
- It currently represents 93% of world coffee production and 63% of world consumption.
- The mission of the Organization is to **strengthen the global coffee sector** and promote its sustainable expansion in a market-based environment for the benefit of all actors in the Global Coffee Value Chain (G-CVC).
- Member countries: 49 (42 coffee exporting and 7 importing countries) 49 Members
- **India is a member** of this organisation.

#### *Coffee cultivation*

- The vast majority of the world's coffee comprises two species — **Coffea Arabica (Arabica) and Coffea Canephora (Robusta)**.
- **Climatic conditions required for coffee production**
  - Climate: Hot and humid climate for its growth.
  - Temperature: Ranging between 15°C and 28 °C.
  - **\*\*Rainfall:\*\*** 150 to 250 cm.
  - **Soil: Well-drained, loamy soil containing** a good deal of humus and minerals like iron and calcium are ideal for coffee cultivation.
  - It is generally **grown under shady trees**.
  - Dry weather is necessary at the time of ripening of the berries.
  - It is grown on hill slopes at elevations from 600 to 1,600 metres above sea level.
- **Coffee growing states in India:** Karnataka, Kerala, Tamil Nadu, Andhra Pradesh and Odisha, among which, Karnataka produces the most with over 70% of the total output.

## Visual treat in Munnar, with balsams in bloom

### Balsam

- It is locally called as **Kasithumba and Onappovu**.
- It is known as '**touch-me-not**' because of the **bursting of mature seeds and seed distribution**.
- They are commonly known by different names including balsams, touch me not, jewel **weed etc**.
- **Distribution**
  - It is distributed in the **tropical, sub-tropical and northern temperate regions of the world**.
  - It is found mainly in India, China and Africa and some parts of Europe and North America.
  - India is home to 220 balsam species in which 135 are found in the southern Western Ghats.
- **Anamudi**, the highest mountain in the Western Ghats, and the surrounding high ranges are known for the diversity of wild balsams.
- The **normal lifecycle** of balsams **is from June to December**.
- The plant mainly grows inside pockets of forest areas.
- This fleshy orophytic herb usually **prefers humid habitats** and completes the lifecycle in the rainy season
- It is a major **indicator species** of climate change.

## This herb tastes and smells like fish; it has recognised health benefits

### Fish Mint

- It is an **herbal plant full of medicinal properties** and **grown on the ground with wide leaves**.
- **Scientific Name: Houttuynia cordata**
- **Other Names:** It has many names, such as **Bishop's Weed, Chinese Lizard Tail, Fish Wort, Fish Leaf, Rainbow Plant and Chameleon Plant**.
- **Despite being called "fish mint", it's not a member of the mint family.** It does, however, **spread aggressively like mint**.
- **Distribution:** Its native range extends from the **Himalayan foothills through Southeast Asia, China, Korea and Japan**.
- **Habitat:** It thrives in **wet locations and can even grow partially submerged in water**.
- **Features:**
  - It is an herb with beautiful **white flowers and broad, heart-shaped leaves**.
  - Unlike its appearance, **it has a fish-like taste and smell**. Hence, the name, fish mint.
  - The **plants grow to 2 to 3 feet in height with a spread of 3 feet**.
  - The **stems of this plant are climbing tender vines**. The **color of its stem is medium to light green**, and its **leaves are of dark to medium green color**.

- It is **considered an invasive plant because of its ability to regrow from underground rhizomes**, which are fragile and break off easily, forming new plants when disturbed.
- **Medicinal Properties:** It is used to **treat digestive issues, insect bites, fevers, coughs, influenza, kidney ailments** and a host of other ailments.
- The leaf is **used in many Asian cuisines as a vegetable or fresh herb**, and fish mint root can also be eaten.

### Centre extends Piyush Goyal's tenure as National Intelligence Grid chief

#### *National Intelligence Grid (NATGRID)*

- It is conceptualised as a seamless and **secure database for information on terrorists, economic crimes and similar incidents to help bolster India's capabilities.**
- **Background:**
  - The **project was started in 2009 in the aftermath of the 26/11 Mumbai terror attacks.**
  - NATGRID was set up as an **attached Office of the Ministry of Home Affairs with effect from December 1, 2010.**
  - It **started its operations on December 31, 2020.**
- Natgrid services **will be available to 11 central agencies and police departments** of all states and union territories.
- **Operation:**
  - It has been **mandated to maintain a repository of intelligence databases.**
  - It works as an **integrated intelligence grid that connects databases of core security agencies** of the government of India.
  - It **will have data related to all immigration entry and exit, banking and financial transactions, credit card purchases**, telecom, **individual taxpayers**, air flyers, train travellers besides others to **generate intelligence inputs.**
  - It will **utilise Big Data and Analytics to study huge amounts of data** generated to analyse events in order to **get a better picture as well as to trail suspects.**
  - The data is **used to counter illegal activities by sharing information** with several security agencies.
- **Data Protection:** The **data is end-to-end encrypted and can be accessed only after proper authorisation and authentication** have been completed.

### Indian Navy To Equip Its MQ-9B Sea Guardian Drones With Sonobuoys, To Hunt Chinese Submarines Lurking In Indian Ocean

#### *Sonobuoys*

- Sonobuoys are **small, expendable devices used in underwater acoustics and sonar systems to detect and analyze sound in the ocean, particularly for tracking submarines** and other underwater objects.
- **Deployment:**

- Sonobuoys are deployed by **dropping them into the ocean from aircraft or launching them from ships** or submarines.
- **They sink to a predetermined depth and begin listening for acoustic signals**, helping pin-point potential submarine threats.
- **Multiple sonobuoys can be deployed in a pattern to determine the exact location** of a target.
- **There are three types of sonobuoys:**
  - **Passive Sonobuoys quietly listen for and record sounds without emitting any signals.** It uses a hydrophone to listen for sound energy from a target.
  - **Active Sonobuoys emit a sound pulse and analyze the return signals (echoes) to detect and locate targets.** It uses a transducer to send an acoustic signal.
  - **Special Purpose buoys provide information about the environment**, such as water temperature, ambient noise level, etc.
- **Components:** A typical sonobuoy consists of a **cylindrical or spherical buoyant housing, sensors for detecting acoustic signals, a battery or power source, and a radio transmitter** or other communication system to relay data to the host platform (e.g., aircraft or ship).
- **Other Applications:** In addition to anti-submarine warfare, they are **used for scientific research and environmental studies**, including studying the behavior of whales and other marine creatures.

#### *MQ-9B Sea Guardian*

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

#### **India retains 40th rank in the Global Innovation Index 2023**

##### *Global Innovation Index 2023*

- It is published by the **World Intellectual Property Organization.**
- It is a reliable tool for governments across the world **to assess the innovation-led social and economic changes** in their respective countries.

- This year, the NITI Aayog, in partnership with the CII and the World Intellectual Property Organisation (WIPO), is hosting, virtually, the India Launch of the GII 2023 on 29th September 2023.
- **Key findings**
  - The Global Innovation Index is built on a rich dataset – **the collection of 80 indicators from international public and private sources** – going beyond the traditional measures of innovation since the definition of innovation has broadened.
  - **Top 5 countries:** Switzerland, Sweden, United States, United Kingdom (4th) and Singapore (5th).
  - It listed India as among the 21 economies that outperformed for a 13th consecutive year on innovation relative to level of development.
  - It states that India, Iran, Philippines, Türkiye, Vietnam and Indonesia are among the economies within the GII top 65 that climbed fastest in the ranking over the last decade.
  - India holds top ranking within the Central and Southern Asia region for **Human capital and research** (48th), **Business sophistication** (57th) and **Knowledge and technology outputs** (22nd).
  - Strong indicators include ICT services exports (5th), Venture capital received (6th), Graduates in science and engineering (11th) and Global corporate R&D investors (13th).

*World Intellectual Property Organisation*

- It works with the vision of encouraging **creative activity and promoting** the protection of Intellectual Property throughout the world.
- WIPO is one of the 15 **specialised agencies of the United Nations**.
- Currently, there are **193 members** of the World Intellectual Property Organisation.
- **Headquarter:** Geneva.