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JANUARY 2025

1. HISTORY AND CULTURE

1.1 Pilippatti Merchant Guild Inscription

Why in News?

Recently, the epigraphy division of the Archaeological Survey of India (ASI) deciphered a Chola-period merchant guild inscription found at Pilippatti village in Pudukkottai district in Tamilnadu.

- The team copied the inscription on ***maplitho paper*** using the estampage method.
- **Time period** – It dates back to the *10th century*.
- **Installation** – It was probably installed during the *reign of either Parantaka Chola or Uttama Chola*.

> ***Estampage*** *is used in order to get an exact copy of an inscription. It is typically derived by applying wet paper onto the rock face, over which any ink material is wiped.*

- **Features** – It has various symbols including Ankush (sharp pointed hook then used to control elephants), Trishul and lamps.
- **Trade groups** – It mentions trade groups of various territorial divisions, including
  - Ainurruvars of Mangala Nadu, Puramalai Nadu, Poongundra Nadu, Manalur Nadu.
  - Virapattinam of Kodumbalur.

Trade guilds

- **Guilds or Shreni**, in Ancient India, was an association of traders, merchants, and artisans. Generally, a separate shreni existed for a particular group of persons engaged in the same vocation or activity.
- Traders founded guilds and called themselves as *sudesi, nanadesi, ainurruvar* and others.
- Several trade guilds flourished during the Chola period.
- Members of the trade guilds convened their meetings to make decisions and engraved them as inscriptions and installed them in public places.

> *ASI team has also copied nearly 10 inscriptions from the walls of* ***Pilavaneswarar temple in Virachilai in Tirumayam*** *taluk. These 11th century inscriptions of Sundarapandiyan and Veerapandiyan mention donations given to the temple.*

Regional Trade Guilds in Tamil Landscape

- **Regional Trade guilds** – There are some stray occurrences like Vellarai Nigamaththor in the Tamil-Brahmi inscriptions.
- **Autonomous functioning** – From 9th century onwards, such trade guilds started functioning in a distinct manner.
  - Ayyapozhil Ainnurruvar (The 500 of Aihole)
  - Tisaiayirathu Ainnurruvar (The 500 of the 1000 directions)
  - Nanadesi (those of various countries)
  - Valanjiyar (Balijas or Banajigas)
  - Pathinenvishayaththar
  - Manigramathar.

1.2 Challenges in Deciphering Harappan Script

Why in News?

Recently, the scholars have struggled to solve many subproblems to decipher the Harappan writing system.

- **Challenges –** Deciding if set of symbols actually represent a writing system.

- *Devising appropriate procedures* to isolate or segment the stream of symbols into a sequence of single signs.
- *Reducing the set of signs* to the minimal set by forming (its alphabet, syllabary, or inventory of signs) by identifying all allographs.
- Assigning to each symbol their specified value, whether phonetic or otherwise.
- Trying to match these values to a specific language.
- **No multilingual inscriptions** – IVC had robust trade links with the contemporaneous Mesopotamian Civilisation whose cuneiform script was deciphered but there aren't any multilingual inscriptions found.
- **Unknown Script and/or Language** – The Indus script is under the category of 'an unknown script writing an unknown language'.

> ***Allograph*** *is the different representations of the same character in different typefaces. It is the same sign written in a variant form, for example a printed 'a' and cursive 'a'*

> *The most famous multilingual inscription is the* ***Rosetta Stone****, which contains a decree passed during the reign of Ptolemy V in 196 BCE in 3 scripts: Greek, demotic (a later ancient Egyptian script), and hieroglyphics.*

3 basic categories of undeciphered scripts/languages

- An unknown script writing a known language.
- A known script writing an unknown language.
- An unknown script writing an unknown language.

- **Insufficient material evidences –** Although some 3,500 seals have been identified till date, given that each seal has on average only 5 characters inscribed, it isn't sufficient to decipher the script.
- This general paucity of information has made it difficult to decipher its script.

> *The Tamil nadu Chief minister has announced a* ***$1 million prize*** *for deciphering the script of the Indus Valley Civilisation.*

1.3 Savitribai Phule

Why in News?

Every year on January 3, people celebrate Savitribai Phule Jayanti.

- **Background** – A Dalit woman from the Mali community from Naigaon village in Maharashtra.
- **Education** – She is the ***1st Indian woman teacher***.
- She and her husband Jyotirao Phule open a school for girls in Pune, in 1848 and this became the ***country's 1st girls' school***.
- During her tenure, she established 17 schools across the nation.
- **Social reforms** – She advocated inter-caste marriages, widow remarriage, and eradication of child marriage, sati and dowry systems, among other social issues.
- **Balhatya Pratibandhak Griha** – A childcare centre for the protection of pregnant widows and rape victims.
- **Satyashodhak Samaj** *('Truth-seekers' society')* – It was setup in 1873 by both of them.
- It is a platform open to all, irrespective of their caste, religion or class hierarchies, with the sole aim of bringing social equity.
- **Literary works** – She published her 1st collection of poems, called *Kavya Phule ('Poetry's Blossoms'),* at the age of 23 in 1854.
- She published Bavan Kashi Subodh Ratnakar ('The Ocean of Pure Gems'), in 1892.
- Matushri Savitribai Phlenchi Bhashane va Gaani (S'avitribai Phule's speeches and songs'), and her letters to her husband have also been published.
- Her Marathi poetry promoted ideals such as equality, liberty, humanism, and the significance of education.
- **Recognition** – In honour of her great work towards women's education, January 3 is observed as ***Women's Education Day***.

1.4 Evolution of the Tabla

Why in News?

Recently, the death of Ustad Zakir Hussain provided an occasion for the reopening of debates among the origins and evolution of the tabla.

- **Word 'tabla'** – It comes from the ***Arabic word 'tabl'*** which means Drum.
- **Origin** – While some trace its origin to *Persian Naqarra*, Hussain traced the origin story of the tabla through the evolution of the styles of *dhrupad and khayal*.
- The most common disagreement concerns whether or not the tabla originated in pre-Islamic India.
- **Evolution** – The classical tabla is a relatively recent tradition, most likely beginning sometime in the 1700s.
- It became the main *accompaniment instrument* for the vocal style known as khyal which helped to raise tabla's status and popularity.

Dhrupad, *a form of Indian Classical music, its origin can be traced back to the chanting of vedic hymns and mantras. It is a form of the Gandharva Veda, the Vedic science of music, which is a branch of Sama Veda.*

Khayal

- It is the most dominant North Indian classical vocal music offers the performer more freedom and a greater scope for improvisation than the older vocal genre 'Dhrupad'.
- **Origin** – Khyal emerged during the Mughal period, when Persian music influences blended with local Indian traditions.
- It came into being after the temple traditions of dhrupad & prabandh gayaki were fused with *qalbana, the Sufi music* (later called qawwali), by the 14th century Sufi saint & musician Amir Khusrau.

- **Major developments –** It took place during the reign of Emperor *Muhammad Shah of Delhi (1719-1748),* whose court host the launch of the sitar and maturation of khayal vocalism.

Amir Khusrau *was patronised by Sultan Alauddin Khalji (1296-1316) of Delhi.*

- **Tabla gharanas** - they are different from vocal and other instrumental gharanas and rest on 3 broad principles
  - The technique.
  - The style of composition - Language/ construction/ phraseology of the tabla syllable in various compositions.
  - The individual philosophy of the great masters of each school.

Muhammad Shah *was an aesthete, and a great patron of music and the other arts, because of which he was referred to as "Rangeela", the Colourful.*

- **6 gharanas of tabla** – They are known by the places where they evolved.
  - Punjab, Purab (also known as the Banaras gharana), Delhi, Ajrara, Lucknow and Farrukhabad.
- **Baaj (playing style)** –It is more pakhawaj-based for the 1st 2 gharanas.
- Purab's crisp and clear sounds are very well suited to Kathak.
- **Punjab gharana** – A mathematical approach, with difficult divisions of beats, is preferred.
- It had offshoots or sub-gharanas such as Talwandi and Naiwala.

1.5 Kurukop Echo Art

Why in News?

A recent study by the researchers in South Africa suggested a distinct echo attracted the ancient artists to one site, Kurukop.

Kurukop
• It is an *archaeological site*. • **Located in** - Nama Karoo region of *South Africa*. • **Geological formation** – Began to accumulate from about 300 million years ago, before the breakup of super continent Gondwanaland. • **Historical formation** – It is an *eroded sandstone hill*, transformed by volcanic activity. • **Signs of human evidence** – It is marked by *112 petroglyphs* and other signs of human presence, such as ostrich eggshell fragments and pottery, dating from c. 11 500 before present. • **Petroglyphs** – It depicts images of Eland, elephants, zebra, ostriches, wildebeest, rhinoceros and animal-human hybrids. • The depiction was made by *hunter-gatherer San and Khoe herder people* who visited Kurukop repeatedly.

- **Kurukop echo –** This place *provides a distinctive echo* that ensured the hunter gatherers to repeatedly visit this place.

***Petroglyphs** engraved on rocks, have an obvious visual attraction.*

- **Echo Art** – Evidence shows that those people created rock art combined with performances like clapping, singing, dancing, which in this case was enhanced by echoes.
    - **Echo** refers to the repetition of sound caused by the reflection of sound.
- It also provides a reference point for a mythological story from the region that speaks about the relationship between echo, wind, mountain and breath.
- **Cultural relevance** – Petroglyph distribution data and Echo pattern, shows *60% of the petroglyphs created directly in the echo zone*.
- This suggests that Kurukop people were most likely to create images in the area that echoed strongly.

1.6 Harvest festivals of India

Why in News?

Harvest festivals are being celebrated across India.

- **Harvest festivals** - It is a yearly celebration that occurs around the time of the main harvest of a given region.
- **Different festivals** - Due to different climates and cropping patterns, India celebrates these Harvest festivals at different times of the year.
- **Significance**
    - To express gratitude for a bountiful harvest, and to recognize the hard work and labor involved in growing crops.
    - People come together as a community to celebrate the end of the growing season.
    - Some harvest festivals have a religious or spiritual origin, often linked to ancient agricultural rituals or celebrations.
    - Commemorate the cycle of life and death and also indicate the end of the agricultural cycle and the beginning of the end of the year

Harvest Festivals Name	States in which it is Celebrated	Day	Significance
Lohri	Punjab, Haryana, Delhi, Himachal Pradesh and Jammu and Kashmir.	13th January	• Marks the end of the winter season. • Folk form

Makar Sankranti	Maharashtra, Gujarat, Uttar Pradesh, Haryana, Himachal, West Bengal, Punjab.	Usually on 14th of January	• Marks the rotation of the sun from Sagittarius to Capricorn
Pongal	Tamil Nadu	January 14 (First day of Tamil month "Thai"	• Pogi, Surya Pongal , Mattu Pongal , Kannum Pongal.
Magh Bihu	Assam	January	• The end of the harvesting season and the beginning of the Assamese new year • Rongali' or 'Bohag Bihu' observed in April, • 'Kongali' or 'Kati Bihu' observed in October or November.
Onam	Kerala	Malayalam month of Chingam (August-September)	• Marks the homecoming of King Mahabali.
Baisakhi	Punjab, parts of Haryana & Delhi	13th or 14th of April every year.	• Marks the beginning of the new agricultural season.
Nuakhai	Odisha	Panchami Tithi of the lunar month of Bhadraba (August-September).	• Beginning of the new crop season
Vaisakha	Bihar	Sixth day of the Hindu month of Kartik (October-November)	• People offer arghya (water) to the sun god, take a holy dip in rivers
Hemis	Ladakh	June-July every year	• It is celebrated in the Hemis Monastery • Marks the birth anniversary of Guru Padmasambhava, the founder of Tibetan Buddhism.
Dree	Arunachal Pradesh	July 5th in the Ziro area of Arunachal Pradesh	• Important time of year for the Apatani tribe.
Hornbill	Nagaland	First week of December.	• Dedicated to the Hornbill bird, which is sacred to the Nagas. • Hornbill International Rock Festival.
Nabanna	West Bengal	On the day of Vishwakarma Puja in the Hindu month of Bhadra (August-September)	• The deity is offered the first crop of the season and a feast consisting of rice, fish curry, and sweets.

1.7 Kalaripayattu

Why in News?

The Indian Kalaripayattu Federation (IKF) accuses the Indian Olympics Association (IOA) for placing Kalaripayattu in the demonstration section in the 38th National Games to be held in Uttarakhand.

- **Kalaripayattu** – It is an ***Indian martial art and fighting style*.**
- **Purpose** – To develop the individual with an extraordinary level of awareness and super-sensitive body-mind co-ordination to keep them ever-prepared for attack & defense.
- **Origin** – It is an ancient martial art ***indigenous to Kerala***, a small state in the southern tip of India, during the 11th –12th century CE.

Kalaripayattu is the oldest and most scientific of all martial arts in the world.

- **Historical references** – It is mentioned in the *Vadakkan Pattukal* ballads written about the Chekavar from the Malabar region of Kerala.
- It is with a legacy of *more than 3000 years*.
- **Training** – It takes place in a ***Kalari, an Arena*** *in natural soil ground.*
    - It ensures *cooling of the body* as the students engage themselves in the gruelling, heat-generating exercises.
    - It *lessens the threat of skin infection* from bites of insects that inhabit the top soil.

- *Children at 7 years*, are initiated into Kalaripayattu.
- **Poothara** – A small, upwardly tapering, 7-tiered structure stands at the south-western corner of the training.
- **Oral commands** – It is called as *Vaaythaari*, a set of technical words or phrases which don't convey much to the ordinary people.

Indian Kalarippayattu Federation (IKF)

- **Established in** – 1995.
- **Aim** – To promote Kalarippayattu, the Martial Arts of Kerala and propagates its values.
- **Motto** – Unity in Diversity.
- **Nodal Ministry** – Ministry and Youth Affairs and Sports.
- **Association in** – 25 states.
- **Recognized as** – National Federation in 2015.
- **Role** - It offers a disciplined and cultured youth for the welfare and progress of the Nation.

1.8 Ratnagiri Buddhist Site

Why in News?

Archaeological Survey of India have recently unearthed a colossal Buddha head, a massive palm, an ancient wall and inscribed Buddhist relics, all of which are estimated to date back 8th and 9th Century AD.

- **Location -** The Ratnagiri Buddhist site, located in the Ratnagiri district of ***Odisha.***
- **Period** - It is an archaeological site that dates back to the 4th-6th centuries CE.
- It is part of the famous ***Diamond Triangle*** of Odisha along with Udaygiri and Lalitgiri, Ratnagiri, translated as the 'Hills of Jewels' was first documented as a historical site in 1905.
- **Rivers** - The site stands on a hill between Birupa and Brahmani rivers.
- **Features** - It features ancient rock-cut caves, stupas, and monastic complexes, showcasing the Buddhist monasticism and art.
- **Origin of sects** - Mahayana and Tantrayana (also known as Vajrayana that involves mystical practices and concepts) sects of Buddhism originated.
- **Associated Travelers -** Chinese Buddhist monk and traveller, ***Hiuen Tsang***, who visited Odisha, during 638-639 AD, might have visited Ratnagiri.
- The new excavations would shed light about the lifestyle, culture, religion, art and architecture at different times.

The links of Buddhism in Ratnagiri and Southeast Asia

- Odisha has long enjoyed maritime and trade links with Southeast Asian countries.
- **Items of Trade -** Pepper, cinnamon, cardamom, silk, camphor, gold, and jewellery were popular items of trade between the ancient kingdom of Kalinga and Southeast Asia.
- **Baliyatra** - The state also annually holds Baliyatra, literally 'voyage to Bali'.
- It is a 7-day festival to commemorate the maritime and cultural links between Kalinga and Bali and Southeast Asian regions such as Java, Sumatra, Borneo, Burma (Myanmar) and Ceylon (Sri Lanka).
- Experts believe that ***Tapassu and Bhallika,*** the two merchant brothers who became the first disciples of Lord Buddha, having their origins from Utkala, another ancient name of Odisha.
- **Mauryan Emperor Ashoka** (304-232 BCE), whose invasion of the kingdom of Kalinga in 261, the ancient name for Odisha led to him embracing the religion.
- Buddhism is stated to have particularly flourished under the ***Bhaumakara dynasty***, which ruled parts of the state in between the 8th and 10th Century.

1.9 Sewa Singh Thikriwala

Why in News?

Recently, January 20 marked the death anniversary of Sewa Singh Thikriwala.

- **Early life –** He was born in late 19th century in Thikriwala village, *part of princely state Patiala, Punjab*.
- His father Dewa Singh was a high-ranking official in the court of Maharaja Rajinder Singh.
- **Revolutionary phase** – He ***spearheaded the self-rule movement*** against the rulers of Punjab's erstwhile princely states.
- His direct criticism of the Patiala Maharaja's rule led the authorities to imprison him.
- His fellow Akali leader *Kharak Singh* launched a campaign against the state for demanding his release.

Praja Mandal Movement

- **Objectives**
  - To protect the civil liberties of the masses.
  - To protest against oppressive taxes.
  - To seek reforms in the peasants' conditions.
  - To open educational institutions.
  - To have a responsible government.
- **Coverage –** It spread over 600 princely states of British India.
- **Important leaders** - Kharak Singh and Master Tara Singh.
- **Significance** - Now part of the Malwa region, with some parts in Haryana, these areas are politically active even today and were hotbeds of the recent farmers' agitations.
- **Punjab Riyasat Praja Mandal** - Was presided by the Sewa Singh Thikriwala.
- It was largely *run by Akali leaders*.

- **Meeting with Gandhi** – After his release in 1928, he ***met Mahatma Gandhi*** in 1931, to discuss the problems faced by the people of Punjab.
- **Negotiation** – Patiala Maharaja initiated negotiation with him but it failed over the demand for an elected assembly.
- **Last phase of his life –** He died in 1935, while he was on a hunger strike in jail over his mistreatment by jail authorities.
- **Memorial** – After his death, a memorial has been held annually in the Thikriwala Village from January 18 to January 20 with a *statue* of him in his native village.

- Government has announced that Sewa Singh's house would also be turned into a memorial.

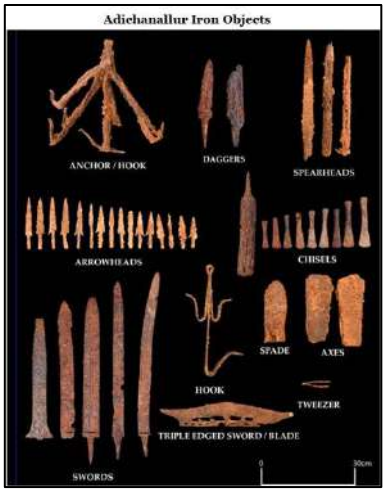
1.10 Tamilnadu Iron Age

Why in News?

*A groundbreaking study reveals that Tamil Nadu's Iron Age began as early as **3,345 BCE**, predating the Hittite Empire's iron usage by a millennium.*

- **Sivagalai** -It is an Iron Age habitation-cum-burial site in the Thamirabarani river valley in Thoothukudi district.
- **Sivagalai excavation** - A total of 24 trenches were excavated at these sites, which exposed around 160 urns, a majority of them being redware
- **Findings** - Skeletal remains, paddy grains, over 85 iron objects including knives, arrowheads, chisels, axes, rings, and swords, were found at the site.
- **Radiometric dating** - The samples from Sivagalai were analyzed by three prestigious research institutions
    - Beta Analytics in the United States
    - Physical Research Laboratory in Ahmedabad
    - Birbal Sahni Institute of Palaeosciences in Lucknow.

- **Advanced dating techniques** - The samples from Sivagalai, however, were subjected to advanced dating techniques
    - Accelerometer mass spectrometry radiocarbon (AMS14C) dating for charcoal
    - Optically stimulated luminescence (OLS) dating for ceramics.
- **The Report** – Findings of the dating study were presented as 'Antiquity of Iron: Recent Radiometric Dates from Tamil Nadu', authored by K Rajan and R Sivanantham.



- **Findings** - Radiometric dating of burial urn samples from Sivagalai indicate a thriving Iron Age civilization in southern India in 4th millennium BCE, contemporaneous with copper civilization of Indus Valley.
- While the regions to the north of the Vindhyas were still in the Copper Age, southern India may have entered the Iron Age due to a lack of commercially exploitable copper ores.
- **Adichanallur charcoal** - Adichanallur in Thoothukudi district, of Tamilnadu produced a charcoal sample associated with iron objects that was dated to 2517 BCE.
- **First smelted iron** - For the first time in the world, smelted iron has been dated back to the middle of the third millennium BCE.
- **Hittite Empire (in modern-day Turkey)**- This was believed to be the first civilization to use iron, with evidence dating back to around 1,380 BCE.
- **Other Iron regions of India** - Brahmagiri in Karnataka and Gachibowli near Hyderabad, were dated to around 2140 BCE and 2200 BCE, respectively.

SHANKAR IAS

1.11 Libia Lobo Sardesai, Goan freedom fighter

Why in News?

Goan freedom fighter Libia Lobo Sardesai was honored with the Padma Shri recently for her pivotal role in the state's liberation struggle.

- Libia, a ***Goan nationalist activist***, was born in 1924 in Portuguese-ruled Goa and grew up in Bombay.
- In 1954, after the Portuguese assaulted and arrested satyagrahis who had entered Goa to demand an end to colonial rule, India closed its borders and imposed an economic blockade.
- The Portuguese had imposed ***"total censorship"*** in Goa, instilling fear and feeding people Portuguese propaganda.
- To counter these lies, the nationalists set up an underground radio station, initially called **'Q'.**
- On November 25, 1955, the station began broadcasting hour-long programs in the morning and evening.
- Libia and fellow Goan nationalists *Vaman Sardesai and Nicolau Menezes* worked nearly 18 hours a day, listening to various bulletins and news from India and abroad.
- They also studying reports, collating information, and scanning Indian and foreign newspapers and newsletters to select information about anti-colonial struggles.
- After 6 years in the jungles, just days before ***Operation Vijay*** was launched to liberate Goa, the Indian border police bundled Libia and Vaman in a jeep and took them to a rest-house in Belgaum.
- On December 17, 1961, the station relayed a direct message from V K Krishna Menon addressed to the Portuguese Governor General, asking him to surrender to prevent unnecessary casualties.
- The Portuguese Governor General asked Libia to go into the skies and announce that Goa is free.
- On December 19, 1961, Libia and Vaman flew in an Indian Air Force plane with a radio transmitter aboard and a loudspeaker announcing in Portuguese and Konkani that the Portuguese had surrendered.

1.12 Devi Ahilyabai Holkar

Why in News?

The Indira Gandhi National Centre for the Arts (IGNCA) organized a special lecture recently on the life and legacy of Devi Ahilyabai Holkar, titled Commemorating the 300th birth anniversary of her.

- Ahilyabai Holkar was a Holkar Queen who ruled the ***Malwa kingdom in the 18th century.***
- She was born in Chondi, present-day Ahmednagar District, ***Maharashtra***, India, on May 31, 1725.
- **Father -** Mankoji Rao Shinde.
- She was married to Khanderao Holkar, son of Malhar Rao Holkar (Founder of Holkar Dynasty).
- After 12 years, her husband Khanderao was killed during the siege of the ***Kumher Fort.***
- Her son, Male Rao, died in 1767.
- In 1767, the Peshwa permitted Ahilyabai to take over Malwa.
- She ascended the throne and became the ruler of Indore on December 11, 1767.
- Maharani Ahilyabai ruled over Malwa with its capital, Maheswar, for 28 years.
- Ahilyabai also established a textile industry in Maheshwar.
- She was instrumental in spreading the message of dharma and propagating industrialization.
- She welcomed Marathi poet Moropant, Shahir Ananta Gandhi, and Sanskrit scholar Khushali Ram into her capital.
- Ahilyabai Holkar tried to protect her kingdom from plundering invaders by appointin ***Tukojirao Holkar*** as the Chief of Army.
- She renovated and repaired the famous ***Kashi Vishwanath Temple*** in 1780.
- She reconstructed the ***Somnath Temple and Mahakaleshwar Temple*** in Ujjain.

Maheswari Sarees got a Geographical Indication Tag in 2012.

SHANKAR IAS ACADEMY

- During her reign, she made significant decisions, such as abolishing traditional laws that confiscated property from childless widows.
- She was famously known as the ***'Philosopher Queen'.***
- She died in *Rajwada*, Indore, present-day Madhya Pradesh, on August 13, 1795, at the age of 70.

Other Important Topics

Blood money

- It is also *known as diya*, a part of the legal systems of several Islamic countries.
- **In Sharia law** – The victim's family is entitled to decide how the murderer should be punished.
- The murderer might be forgiven if he/she is repaid with *'diyya' (monetary compensation)*.

Glass Bridge in Kanyakumari, Tamilnadu

Tamil Nadu has recently opened an innovative glass bridge spanning the sea, improving access between 2 iconic sites.

- **Connection** – It connects the *Tiruvalluvar Statue with the Vivekananda Rock Memorial* in Kanniyakumari.
- The occasion commemorated the Tiruvalluvar statue's 25th anniversary, underlining its importance in Tamil culture.

Statue of Wisdom

- **Arahata Sariputra and Arahata Maudgalayana**
- They are esteemed disciples of the *Lord Buddha*.
- The revered Relics of Lord Buddha, along with those of his esteemed disciples, Arhanta Sariputra and Arahanta Maudgalayana, were taken to Thailand for 26-day exposition.

Oman Collection

- **Launched in** – May 2024.
- **Launched by** – National Archives of India (NAI).
- The Oman Collection is the first overseas digitization project by the NAI, aimed at *preserving the historical records of the Indian community in Oman*.
- **Document digitalization** – The project digitized over 7,000 documents from private collections of prominent Indian families, many of whom have been settled in Oman for over 250 years.

Kalagram: The Cultural Jewel of Mahakumbh 2025

- It is an interactive and transformative experience, weaving together the stories of artisans, performers, and culinary masters from across the nation.
- **Conceived and curated by** – Ministry of Culture
- **Rooted in** – 3Cs: *Craft, Cuisines, and Culture.*
- It is not merely an exhibition space, it is a living, breathing tapestry of India's heritage.

Excavations of a Buddhist complex in Ratnagiri, Odisha

- **Focus on** – Uncovering relics and evidence of ties to Southeast Asian cultures.
- **Recent Discoveries** - *Colossal Buddha head, 5 foot palm*, and inscribed relics from the 8th and 9th centuries.
- **Previous Excavations** - 1958 to 1961 excavations by *Debala Mitra* revealed a brick stupa, monastic complexes, and votive stupas.

History of Ratnagiri in Odisha

- **Time period** – 5th to 13th centuries.
- **Politically associated with** – Mauryan Emperor Ashoka.
- **Culturally significant for** – Buddhist learning, especially between the 7th and 10th centuries.

Maritime Trade of Odisha (Kalinga)

- **Trade ties with** – Southeast Asia, exchanging spices, silk, and metals.
- **Baliyatra festival** – It celebrates historical links to Bali and Sri Lanka.
- **Spread of Buddhism** – Merchant brothers Tapassu and Bhallika of kalinga were recognized as Buddha's early disciples.

Parakram Diwas

- **Parakram Diwas** – To commemorate *Netaji's birth anniversary*.
- **Organized by** – Ministry of Culture.
- **1st Edition in** – *2021*, held at Victoria Memorial, Kolkata.
- **2025 Parakram Diwas** – on 128th birth anniversary, to be held at *Cuttack, Netaji's birthplace*.
- **Recognition** – His house has now been converted to a museum dedicated to him.
- In 2023, a *hologram statue of Netaji* unveiled at India Gate, New Delhi and 21 unnamed islands in Andaman and Nicobar named after 21 Param Vir Chakra Awardees.

Tripura, Manipur and Meghalaya Statehood Day 2025

- **Foundation Day** – *1972*, 21st January.
- **Meghalaya** – Once a part of Assam, Meghalaya gained autonomy through the *Assam Reorganisation (Meghalaya) Act of 1969*.
- The constitutional framework for this significant transition was established by the *North Eastern Areas Reorganisation Act, 1971.*

76th Uttar Pradesh Foundation Day 2025

- **Statehood Day** – 1950, 24 January.
- **Historical background –** It is recognized in the later Vedic Age as *Brahmarshi Desha or Madhya Desha*.
- **1935** – Its name was shortened to United Provinces.
- **1950** – United Provinces was renamed as Uttar Pradesh.

- It is home to revered places such as,
    - Birthplace of Lord Ram in Ayodhya.
    - Lord Krishna in Mathura.
    - Holy city of Varanasi.
- It is a "*Holy Land*" in shaping India's history, mythological tales, and culture.

Mannan Community

- Raman Rajamannan, the only tribal king of Mannan community participated in the Republic Day parade.
- **Located in** – Idukki's dense forests, *Kerala.*
- **Origin** – *Tamil Nadu*, where their ancestors fled centuries ago during the Chola-Pandya wars.
- **Governance** – Led by the king, Rajamannan, supported by a council of 50 ministers called *Kaanis*.
- **Occupation** – Forest dwellers, farmers, daily wage labourers or employees in the Forest Department.

Jayati Jai Mamah Bharatam (JJMB)

- **JJMB** – It is a spectacular ensemble featured over *5,000+ artists performed more than 50 folk and tribal dance forms.*
- It showcasing India's rich heritage on a global stage.
- **Themes** – Viksit Bharat, Virasat bhi Vikas bhi and Ek Bharat Shreshtha Bharat.
- **Performance** – Sangeet Natak Akademi.
- **Nodal Ministry** – Ministry of Culture.
- **Recognized by** – *Guinness World Records* for 'The Largest Indian Folk Variety Dance'.

Excavation of Iron knife

- **Found in** – Marungur archaeological site, Cuddalore district of Tamil Nadu.
- **Found by** – Tamil Nadu State Department of Archaeology (TNSDA).
- **Iron knife** – It is a *broken knife made of iron* weighing 23 grams.
- **Measurement** – 13 cm long and 2.88 mm thickness.
- **Usage** – It dates back to at least *5,300 years ago*.
- It is the oldest date available for the Iron Age in India.

Discovery of 30 Inscriptions

- **Found in** – Abbana Bettu Basadi, Karnataka.
- It is *450-years old*, and provided insights into *Jain heritage*.
- **Spanning -** Several centuries of *Kalasa-Karkala Jain* dynasty.
- The earliest inscription on 16th century dates back to the reign of Saluva Bhairarasa (Bhairarasa II).
- It records that Lakshmamanadevi, the wife of Saluva Bhairarasa,

commissioned a list of 24 Tirthankaras and donated it to the basadi.

- Another 16th-century inscription reveals that it was commissioned by a patron named Devarasa.
- The inscriptions on the silver arches are the most recent among the discoveries, dating back to the 19th century.
- **30 inscriptions**
- **29 inscriptions** – Kannada script.
- **1 inscriptions** – Nagari, bearing only the name of a Tirthankara.

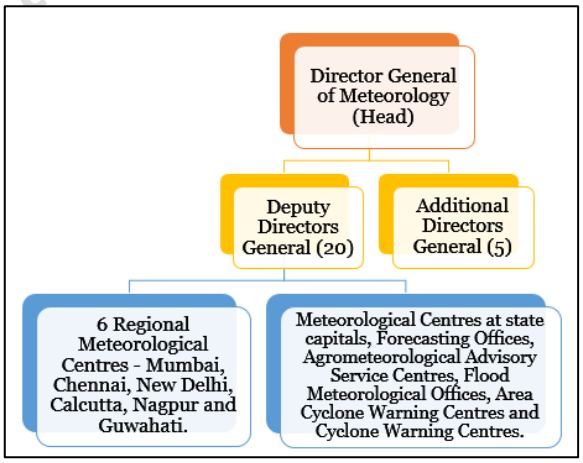
2. GEOGRAPHY

2.1 India Meteorological Department (IMD)

Why in News?

The India Meteorological Department (IMD) will be completing 150 years of service as of January 15, 2025.

- **IMD** – It is the *National Meteorological Service* of India and the principal government agency in all matters relating to meteorology and allied subjects.
- **Historical background** – Science and Meteorology in India commenced with the establishment of the *1st Meteorological and Astronomical Observatory in (then) Madras in 1793*.
- The Sanitation Committee was formed in 1860 and the Meteorological Committee at provincial level was set up.
- **Established in** – ***1875*** with H.F. Blanford as the Meteorological Reporter.
- **Headquarters** – New Delhi.
- **Nodal Ministry** – Ministry of Earth Sciences.
- **Objectives –** To take *meteorological observations* and to provide current and forecast meteorological information.
- To *warn against severe weather phenomena* which cause destruction of life and property and to conduct and *promote research* in meteorology and allied disciplines.
- **Networks** – It has *6 Regional Meteorological Centres* (RMCs) catering to 6 regions of the country, which are further assisted by *26 Meteorological Centres (MCs) at the State level*.



- **Works**
  - Preparation of 1st chart in 1877.
  - Preparation of 1st Daily Weather Report in 1878.
  - Radar age and flood meteorological services between 1947-1959.
  - Global monitoring and better forecasting up to 24 hours in 1971-1983

*Between 2014 and 2023, there was rapid enhancement of weather and climate services and the **forecast accuracy** improved by 40-50%.*

2.2 Rat-Hole Mining

Why in News?

Recently, several workers have been trapped for more than 12 hours in a rat-hole mine after it was flooded with water in Dima Hasao district, Assam.

- **Rat-hole mining** – It is a method of ***extracting coal from narrow and horizontal seams.***

- The term "rat hole" refers to the narrow pits dug into the ground, typically just large enough for 1 person to descend and extract coal.
- It is prevalent in ***Meghalaya.***
- **Process** – Once the pits are dug, miners use ropes or bamboo ladders to reach the coal seams.
- The coal is then manually extracted using primitive tools such as pickaxes, shovels and baskets.

Types of Rat-Hole mining	
Side cutting	**Box cutting**
Narrow tunnels are dug on the hill slopes and workers go inside until they find the coal seam.	A rectangular opening is made.
Size – Very thin, less than 2 m in most cases.	**Size** – Varying from 10-100 sqm and through that a vertical pit is dug, 100-400 feet deep.

- **Issues** – The mines are *typically unregulated and lacking safety measures* such as proper ventilation, structural support or safety gear for the workers.
- The mining process cause land degradation, deforestation and water pollution.
- Unregulated mining led to water with high concentrations of sulphates, iron, and toxic heavy metals, low dissolved oxygen, and high biochemical oxygen demand.
- Its hazardous working conditions, environmental damage and numerous accidents leading to injuries and fatalities.
- **Ban** – The ***National Green Tribunal (NGT)*** banned the practice in 2014 and retained the ban in 2015.

The two rivers, Lukha and Myntdu, became too acidic to sustain aquatic life because of ***unregulated mining*** *in Meghalaya.*

2.3 Khor Kalmat Lagoon

Why in News?

Recently, according to the U.S. Geological Survey, the aerial image of Khor Kalmat lagoon appear darker and more vibrant, like blue ink bleeding.

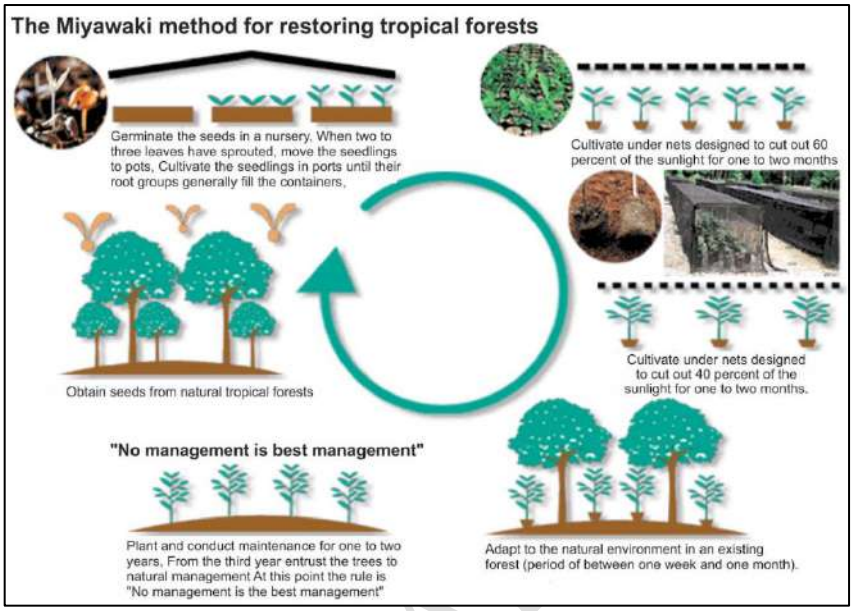
- **Khor Kalmat** – It is a ***tidal lagoon*** *that fully forms only at high tide*, when waters from the Arabian Sea run through a narrow channel carved into the coastline.
- At low tide, it almost completely empties, leaving behind exposed mudflats.
- **Located in** – *Makran Coast in Pakistan's Balochistan province*, around 180 miles west of Karachi.
- It is cut off from the rest of the mainland by harsh desert mountains, known as the ***Makran Coast Ridge***, which run parallel to much of the country's coast.
- **Area** – It spans around 17 miles at its widest point and includes ***Makran Coastal Range***, an arid desert mountain land.
- **Supports life** – It is home to sizable *mangrove forests*, which are an important nursery for juvenile fish, as well as other marine organisms, such as crustaceans and mollusks.
- At low tide, it provides a hunting ground for wading birds that reside in ***Buzi Makola Wildlife Sanctuary***, which lies west of lagoon.
- **Supports livelihood** – It provides timber to the few local people who live alongside the lagoon.
- **Threats** – Overfishing, deforestation of mangroves and rising temperatures driven by human-caused climate change.
- It is under threat by the potential construction of a proposed *Pakistani Naval Base*.

2.4 Miyawaki technique

Why in News?

In preparation for Mahakumbh 2025, dense forests have been developed at various locations across Prayagraj, to ensure pure air and a healthy atmosphere for the millions of devotees expected to visit the city.

- **Miyawaki Foresting** – An ecological engineering technique of afforestation, involves planting a diverse range of *native tree species in a small area*, which then grow into a ***dense, multilayered forest***.
- **Developed by** – *Japanese botanist Akira Miyawaki* in 1970s.
- **Aim** – To create a self-sustaining forest, with a high level of biodiversity and to restore degraded land and combat climate change.
- **Process** – It involves planting *trees and shrubs close* to one another to accelerate their growth.
- Plants ***grow 10 times faster*** with this technique, making it a practical solution for urban areas.



- A completely *maintenance-free*, wild and native forest *after the 1st 3 years*.
- **4 steps of Miyawaki foresting technique**
  - Initial survey of the locality
  - Collection of the seeds
  - Preparation of planting sites
  - Planting.
- **Benefits** – *Up to 30 times more dense* than conventional plantations.
- Up to 30 times better *noise and dust reduction*.
- Up to 30 times *better Carbon-dioxide absorption* as compared to a monoculture plantation.
- It is highly effective in the establishment of *urban forests* as well as converting unproductive wastelands into ecological and socially beneficial productive lands.

*Miyawaki Technique is also known as **Pot Plantation Method**.*

The Prayagraj Municipal Corporation has utilized the Japanese Miyawaki technique over the past 2 years to establish multiple oxygen banks, which have now transformed into lush green forests. It also contributed to improving air quality, playing a crucial role in environmental conservation.

2.5 Z-Morh Tunnel

Why in News?

The Z-Morh tunnel is to be inaugurated by the Prime Minister on January 13, 2025 that was started in 2018.

- **Z-Morh tunnel** – It is named after the *Z-shaped stretch of road* that the tunnel has replaced (Z-Morh translates to "Z-turn" in English)
- **Aim** – To provide all-weather connectivity to the Sonamarg tourist town.
- **Location** - Between Gagangir and Sonamarg in ***Jammu and Kashmir***.
- **Construction** – It is built under the Mountain glacier of *Thajiwas Glacier* between Gagangir and Sonamarg.

- **Need** - At present, the Gagangir-Sonamarg stretch of the road gets blocked by heavy snowfall and avalanches that hit the area every year.
- **Features** – It is a 6.5 km long 2-lane road tunnel and the main tunnel is 10.8 metres long, with a modified
    - **Horseshoe shaped tunnel** – 7.5 metres.
    - **D-shaped ventilation tunnel** – 8.3 metres.

Z-Morh Tunnel together with the adjacent Zoji-La Tunnel, on the Srinagar-Leh Highway will provide year-round weather-proof connectivity to Baltal (Amarnath cave), Kargil and other places in the Ladakh region.

- **Advantage** - It takes only 15 minutes to travel the 6.5 km long tunnel compared to hours over the zig-zag road up and down the hills.
- **Significance** - It is to become the 1st strategic corridor between Kashmir and Ladakh.
- It will also enhance military logistics and boost tourism and the economy.
- It will help the employment of local youth and boost tourism and allied activities in the area.

***Zojila Tunnel**, which is under construction will be the longest tunnel in Asia, which cut through the Himalayan range at Zojila Pass to reach the Kargil district in Ladakh.*

2.6 Global Importance of Greenland

Why in News?

US President-elect Donald Trump has expressed interest in acquiring Greenland.

- **Greenland** – It is *world's largest island*.
- It is a *semiautonomous territory of Denmark*, a longtime U.S. ally and a founding member of NATO.
- **Environmental importance** – It holds enough ice that if it all melts, the world's *seas would rise by 7.4 meters*.
- Melting of ice would reshape coastlines across the globe and potentially shift weather patterns.
- It plays a role in the dramatic freeze that two-thirds of the United States is currently experiencing.
- It also *changes patterns in the jet stream*, which brings storms across the globe and dictates daily weather.
- **Role in AMOC Ocean current** – It serves as the engine & on/off switch for Atlantic Meridional Overturning Circulation (AMOc) that influences Earth's climate like hurricane and winter storms.
- **Economic importance** – It has valuable *rare earth minerals* needed for telecommunications, as well as uranium, billions of untapped barrels of *oil and a vast supply of natural gas*.

- **Concerns** – It is *warming 4 times faster* than the rest of the globe.
- Since 1992, Greenland has *lost about 182 billion tons of ice each year*, with losses hitting 489 billion tons a year in 2019.
- *AMOC is slowing down* because more fresh water is being dumped into the ocean by melting ice in Greenland.

*In 2012, weather patterns over Greenland helped steer **Superstorm Sandy** into New York and New Jersey in the United States.*

Greenland is also home to a large U.S. military base.

- It is *also changing color* as it melts from the white of ice, which reflects sunlight, heat and energy away from the planet, *to the blue and green* of the ocean and land, which absorb much more energy.

2.7 The sada

Why in News?

The land-use patterns sada region are changing and they are increasingly being converted to orchards or residential areas.

- **Sada** – They are lateritic flat tops region on the konkan region of western ghats, locally called sada, meaning a large flat area .
- They are formed by centuries of erosion.
- **Characteristics** - The sada are barren most of the year but become transformed during the monsoons.
- They are similar to the plateaux, locally called pathar, in the Satara district of Maharashtra, of which the Kaas Plateau is a well-known example.
- They are rocky and harbour unique endemic flora that cover it in the monsoon season.
- **Biodiversity sada** - 459 plant species, of which 105 are endemic to the Konkan region.
- 31 species of reptiles, 13 species of amphibians, 169 species of birds, and 41 species of mammals in the region.

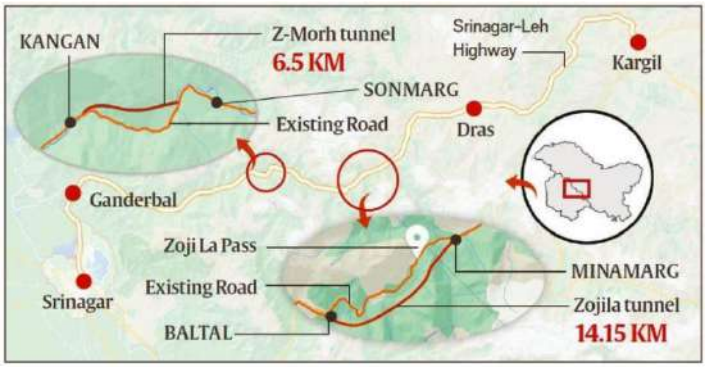
- **Farming** - During the monsoons, the locals use small patches of sada to grow rice and millets (like nanchani, Eleusine coracana) with traditional practices that don't require the use of pesticides and chemical fertilisers.
- **Water catchment** - The highly weathered lateritic soil layer on the top acts as a catchment for the rainwater and recharges the groundwater , enabling the villages in the sada have access to fresh water all year round.
- **Geoglyphs** - The area is also host to works of art called geoglyphs, dated to roughly 10,000 years ago.
- **Wasteland** - The fact that the sada is also classified as a 'wasteland' in the Wasteland Atlas makes matters worse.

2.8 Sonamarg tunnel

Why in news?

Recently Sonamarg tunnel has been inaugurated by the Prime Minister.

- **Sonamarg Tunnel project** – It is around 12 km long, has been constructed at a cost of over Rs 2,700 crore.
- **Components** - It comprises the Sonamarg main tunnel of 6.4 km length, an egress tunnel and approach roads.
- **Sonamarg tunnel** - Previously known as Z-Morh Tunnel, is a 6.5 km long 2-lane road tunnel between Gagangair and Sonamarg in the Ganderbal district of Jammu and Kashmir in northern India.
- It is Situated at an altitude of over 8,650 feet above sea level.
- **Leh Connectivity** - it will enhance all-weather connectivity between Srinagar and Sonamarg enroute to Leh.



- **Ladakh Connectivity** – It ensures safer and uninterrupted access to the strategically critical Ladakh region.
- **NH 1** – Along with Zojila tunnel, It will ensure seamless NH-1 connectivity between Srinagar Valley and Ladakh.

- **Tourism promotion** - It will also promote tourism by transforming Sonamarg into a year-round destination, boosting winter tourism, adventure sports, and local livelihoods.

Other Important Topics

Lempa River (Rio Lempa)

- **Location -** Lempa River, a river in Central America.
- It is a *transboundary river* shared by countries such as El Salvador, Guatemala and Honduras.
- It is *El Salvador's largest* and only navigable one.

Cold Wave Definition

- The United Nations Office for Disaster Risk Reduction defines cold wave as a phenomenon where surface temperatures in an area fall below a certain threshold for at least 2 consecutive days.
- According to the IMD, a cold wave is declared when minimum temperatures are ***10°C or lower in the plains***, or ***0°C or lower in the hills***, sustained over three consecutive days.

Mountain ranges in Africa

- Reduced fog due to increased temperatures are among the climatic changes that affects the mountain regions of Africa.

Mountain Regions	Countries
Kilimanjaro & Udzungwa	Tanzania
Kigezi	Uganda
Mount Kenya & Aberdare	Kenya
Itombwe	Democratic Republic of the Congo
Nyungwe	Rwanda

Places in News

- **Rottnest Island** – It is *in Australia*, where a seaplane crashed with 3 people getting seriously injured and 3 others remain missing.
- **Ramree Island** – It is located *in Myanmar*, an area controlled by the ethnic Arakan Army in western Rakhine state.

Tripura

- **Borders** – Bangladesh (East Bengal) to the north, south, and west, and Assam and Mizoram to the east.
- **Demography** – Majority are the *Hindu Bengali people*, while indigenous communities or *tribes, account for about 30%.*
- **Tribal groups** – Among the 19 recognised tribes, those speaking the *Kokborok language* form the largest group.

Manipur

- **Historical background** – It was under British rule and officially merged with India when Maharaja Budhachandra signed the *Treaty of Accession in 1949*.

- **Capital** - Imphal, also known as *Kangleipak and Sanaleibak*.
- **Bordered by** – Nagaland to the north, Mizoram to the south, Assam to the west, and Myanmar (Burma) to the east.
- **Population demography** – It includes diverse ethnic groups like *Meetei, Kuki, Naga, and Pangal*, who primarily speak *Sino-Tibetan languages*.

Meghalaya

- The term 'meghalaya' meaning '*the abode of clouds'* in Sanskrit.
- **Borders** - Bangladesh to the south & west and Assam to the east.
- **Capital** - Shillong, is nestled in the Khasi Hills.
- **Primary languages** – *Khasi, Pnar, Garo, and English*.
- It is known as the wettest region in India, around 70% of Meghalaya is covered in lush forests.

Demographic dividend of India

- **Below 35 years of age** – 65% of population
- **Below 25 years of age** – 50% of population

Arkavathi River

- **Location** – Mountain River in *Karnataka.*
- **Tributary of** – Kaveri River.
- **Originates at** – Nandi hills and feeds into Kaveri.
- **3 tributaries** – Kumudavathi River, Suvarnamukhi River, and Vrishabhavathi River.
- Half of the river is *critically polluted*, as per the Central Pollution Control Board (CPCB).

Uttar Pradesh

- **Capital** – Lucknow.
- **Languages** – Hindi and Urdu.
- **Bordered by** – Uttarakhand and Himachal Pradesh in the north, Haryana in the west, Madhya Pradesh in the South and Bihar in the east.
- **Rivers** – Ganga, Yamuna, Gomti, Ram Ganga, Ghagra, Betwa, Ken.
- It is blessed with *fertile and mineral-rich soil*.

South Lhonak Glacial Lake

- **Located in** – North Sikkim, at an altitude of 5,200 m.
- **Formation** – Due to the melting of the *Lhonak glacier*.
- It is one of the *largest and fastest growing glacial lakes* in Sikkim.
- **Disaster** – In 2023, it caused a *Glacial Lake Outburst Flood (GLOF)* which washed away the 1,200 MW Teesta-III Chungthang Dam.
- It *triggered a landslide* about 30 km downstream of the lake.
- It remains a potential hazard due to its size and the melting glacier.

Lake Victoria

- **Located in** – Africa, *largest lake in the African* Great Lakes.
- **Bordering** – Uganda, Kenya, and Tanzania.
- **Chief reservoir of** – *Nile.*
- **Facts** – *World's largest tropical lake*.
- *2nd largest* fresh water body in the world.
- **Threats** – Deforestation, land use change, loss of wetland quality and waste from urban areas, industries and farm lands.
- **Impact** – Pollution, Loss in water quality and Algal blooms.

Dibrugarh

- *Dibrugarh will be the Assam's 2nd capital sport an assembly complex by 2027.*
- **Located in** – *Upper Assam*.
- **Adjoining to** – Tinsukia district.
- **Part of –** Brahmaputra River basin.
- **Background** – The British-era hub of *tea, oil and coal trade*.
- **Land forms** - Flood plain of Brahmaputra River and the terrace deposits and denudational hills in the southern part.
- **Economy** – It was one of the *highest revenue-collecting centers.*

Coronal Mass Ejections (CMEs)

- **CMEs** – They are magnetized plasma bubbles ejected from the Sun and evolve in the interplanetary medium.
- **Appearance** – It looks like huge, twisted rope, called as Flux Rope.
- **Speed Range** - Slower than 250 kilometers per second (km/s) to as fast as near 3000 km/s.
- They are the major drivers of perturbations in the Earth's magnetic field, known as geomagnetic storms.
- Such storms can cause severe impacts on ground and space-based technological systems, such as communication disruptions, deorbiting satellites, and power grid failures.

3. POLITY

3.1 Doctrine of Merger

Why in News?

The Supreme Court recently explained the effect of merging the trial court's decree with that of the decree passed by the High Court in the second appeal.

- **Doctrine of merger** – It is a common law principle that states that when a superior court makes a final order on a case, the lower court's order is merged into it.
- This means that the superior court's order is the ***final and binding order.***
- **Working -** The doctrine of merger applies when a lower court's order is challenged in a superior court.
- The superior court can affirm, modify, or reverse the lower court's order.
- Once the superior court makes a final order, the lower court's order is merged into it.
- The superior court's order is the final and binding order.
- **Features** - The doctrine of merger ***prevents*** more than one order from governing the same subject matter at the same time.
- It helps determine which order should be enforced when multiple orders are made on the same issue.
- The doctrine of merger ***applies in judicial proceedings.***
- It applies when the Supreme Court is exercising its appellate jurisdiction.
- **Judicial Doctrine Overview**
    - Statement of judicial propriety.
    - Aims to discipline subordinate adjudicating authorities.
    - Not universally applicable; depends on superior forum jurisdiction and challenge content.

3.2 Whip System in India

Why in News?

Vice President Jagdeep Dhankhar's statement that party whips restrict MPs' freedom of expression has sparked debate, with the Supreme Court stating the whip system is necessary for political party preservation.

- **Origin -** It originates from the hunting fields of England, where a whipper-in was a member of the hunting party whose job was to bring straying hounds back into the pack.
- Its use in politics comes from Anglo-Irish politician and philosopher Edmund Burke.
- In India, the whip system is as old as its parliamentary history.
- The whip system is crucial for parliamentary functioning in India.

Anti-defection Law was enacted through the 52nd Amendment Act, 1985 as part of the 10th Schedule of the Constitution of India.

- Member of Parliaments (MPs) are expected to vote on crucial matters and follow the party's line, as absence or voting against the party line can embarrass the party.
- Full attendance and compliance during division indicate the strength of the party or alliance, and failure to demonstrate majority can lead to a ***no-confidence motion.***
- The party chief whip serves as a bridge ***between party leadership and MPs***, ensuring their attendance and voting according to the party's wishes. A party whip is sacrosanct in this context.
- **Type of Whips -** There are three kinds namely, one-line whip, two-line whip and three-line whip.
- A one-line whip just informs members about a vote but ***permits them to abstain.***
- A two-line whip asks them to be present but does not tell them how to vote.
- The three-line whip, largely the norm these days, directs members to be present and vote as per the party line.

All-India Whips conference has been held since 1952 and Organized by the Ministry of Parliamentary Affairs.

- A three-line whip to party members by a party's chief whip carries the heading "Three-Line Whip".
- As per the Anti-Defection Law, disqualification can happen for violation of a three-line whip.
- The most important role in the whip system is that of the chief whip of a political party.

SHANKAR IAS ACADEMY

- The Minister of Parliamentary Affairs is the government's chief whip in the Lok Sabha whereas in the Rajya Sabha, the Minister of State for Parliamentary Affairs is the government's chief whip.
- They can request leaders of all parties of the ruling alliance to issue a three-line whip to their members to be present and vote in a certain manner.
- A party ticket elects someone who agrees with its ideology and policies, necessitating discipline.

Other Important Topics

Kerala Forest (Amendment) Bill, 2024

The Kerala government has brought in a Bill to amend the Kerala Forest Act, 1961.

- It is to prevent using the forest as a place for dumping waste materials.
- Dumping waste materials in rivers within the forest area or in water bodies flowing into forest areas are to be made offences under the proposed amendments.
- Besides, the Bill envisages giving more powers to forest officers, and also hikes manifold the fines imposed for various offences.

Drug Trafficking and National Security Conference

- **Conducted in** – New Delhi.
- **Organized by** – Narcotics Control Bureau (NCB).
- **Aim** – To address the growing concern of drug trafficking and its impact on national security, with a *special focus on 8 states* and *Union Territories* of northern India.

Anti-Narcotics Measures in India

- Ministry of Home Affairs (MHA) is implementing a 3-pronged strategy to achieve a *drug-free India by 2047*.
- **MANAS portal** - National Narcotics Helpline.
- **ANTF** - Anti-Narcotics Task Force of States and Union Territories.
- **NCORD** - Narcotics Coordination Mechanism.
- **PIT-NDPS Act** - Prevention of Illicit Traffic in Narcotic Drugs and Psychotropic Substances.
- **Special NDPS courts** – For speedy trial of drug-related cases.
- **Policy** - Zero Tolerance Policy against drug trafficking.

National Financial Reporting Authority

- **Constituted in** - *2018* under Companies Act, 2013.
- **Functions and Duties** - Recommend accounting and auditing policies & standards to be adopted by companies for approval by the Central Government.
- Monitor and enforce compliance with auditing & accounting standards.

8th edition of Pariksha Pe Charcha

- It is a nationwide movement to *transform exam-related stress into a festival of learning* and celebration.
- **Organized annually by** – Department of School Education & Literacy under the Ministry of Education.
- **Role** – It reinforces its message of resilience, positivity, and joy in learning, ensuring that education is celebrated as a journey rather than a pressure-driven task.

- **2025 Edition** – It concluded with a record-breaking over 3.5 crore participation from students, teachers and parents.

All India Presiding Officers' Conference (AIPOC)

- **AIPOC** – It is the apex body of the Legislatures in India.
- **1st Edition in** – *1921*, has completed its *100 years in 2021.*
- **85th edition** – It *held in Patna*, has adopted 5 resolutions on
  - Tributes to founding fathers
  - Respect for values in constitution
  - Barrier-free and orderly debates
  - Celebration of 75th years of constitution
  - Use of digital technology

One Nation, One Legislative Platform

- **Vision of** – Indian Prime Minister.
- **Concept** – A unique platform to Indian citizens, enabling them to *access Parliament debates and legislative debates* on any topic through keyword, metadata, and AI-powered search.
- **Current progress** – Parliament debates are being made available online by translating them into *both Hindi and English*.
- State legislatures have also made remarkable progress in digitizing their current and past debates.

Beti Bachao, Beti Padhao movement

- **Launched in** – 2015, at Panipat in Haryana.
- **Objectives** - To prevent gender biased sex selective elimination
  - To ensure survival and protection of the girl child
  - To ensure education and participation of the girl child
  - To increase girl's participation in the fields of sports.
- **Tri-ministerial effort of**
  - Ministry of Women and Child Development
  - Ministry of Health & Family Welfare
  - Ministry of Human Resource Development.

National Voters' Day (NVD) – 25th January

- **Commemoration of** – The *foundation day of the Election Commission of India (ECI)*.
- It is observed *since 2011,* it is 15th National Voters' Day in 2025.
- **Aim** – To underline the centrality of the voter.
- To raise electoral awareness among citizens and to promote the enrolment of new voters.
- **2025 theme** - Nothing Like Voting, I Vote for Sure.
- President will present the *Best Electoral Practices Awards* to state and district officials who demonstrated exemplary performance in ensuring the smooth conduct of elections.
- **ECI** – It was established on January 25, 1950, a day before India became a Republic.

Electoral rolls in India

- **Electoral Roll** – A list of people who've enrolled to vote.
- **Preparation by** – Election Commission.
- **Current electoral database** – It now *stands at 99.1 crore* and counting.
- **Trends** – A 6-point increase in Electoral Gender Ratio from 948 in 2024 to 954 in 2025.
- It bear a youthful and gender balanced look
    - 18-29 age group – 21.7 crores.

27th National Conference on Good Governance

- **Organized by** – Department of Administrative Reforms and Public Grievances (DARPG).
- **Vision** – Maximum Governance – Minimum Government.
- It is to be held in *Gandhinagar, Gujarat*.
- **Objective** – To bring national and state level public administration organizations on *a single platform to share experiences* in,
    - Innovations in public administration
    - Future public solutions for improving quality of life
    - Good governance
    - E-governance
    - Digital governance, etc.

Radar Equipment for the Measurement of Speed of Vehicles

- **Under** – Legal Metrology (General) Rules, 2011.
- **Nodal Ministry** – Ministry of Consumer Affairs, Food & Public Distribution.
- **Effect from** – July 1st, 2025.
- **Purposes** – It provides that all equipment's shall be *verified and stamped* to ensure their correctness for the protection of human beings in accidents, wear & tear of roads etc.
- It will ensure *precise measurement* of speed, distance, and other relevant parameters.

National Anubhav Awards Scheme

- **Launched in** – 2015.
- **Launched by** – Department of Pension &Pensioners' Welfare, through an *online platform 'Anubhav'*.
- It is a scheme for *retiring/retired employees* to showcase their significant achievements made during service period.
- **Aim** – To recognize the contribution of eligible Government employees.
- **Eligibility** – Employees of Central Government.
    - **Central Public Sector Undertakings (CPSUs)** – Public Sector Banks who are *going to retire in next 8 months* or who have *retired within 3 years.*

2nd Edition of Lok Samvardhan Parv

- **Part of** – 100 days' program for showcased various schemes, programs and achievements of the Ministry.
- **Nodal Ministry** – Ministry of Minority Affairs.
- **Concept** – It was a *platform to popularize the schemes* and achievements of the Ministry.

- **Feature** – To highlight the activities undertaken in convergence with partner organizations and success stories under its various schemes.
- It is an inclusive development programme benefitted a large number of persons from all the minority communities.

Members of Parliament Local Area Development Scheme (MPLADS)

- **Launched in** – 1993.
- **Launched by** – P.V. Narasimha Rao, Prime Minister of India (1991-1996).
- **Nodal Ministry** – Ministry of Statistics & Programme Implementation.
- **Objective** - To provide *funds to MPs* to facilitate developmental works in their constituencies.
- **Fund** – It is a Central Sector Scheme where Each MP has the choice to suggest to the District Collector works to the tune of *Rs.5 Crores per annum.*

Khelo India Scheme

- It is a National Programme for Development of Sports.
- **Aim** – To encourage sports all over the country.
- **Time Period –** 2021-22 to 2025-26.
- **Components –** Creation and Upgradation of Sports Infrastructure.
- Sports Competitions and Talent Development.
- Khelo India Centres and Sports Academies.
- Fit India Movement.
- Promotion of Inclusiveness through Sports.

Mangrove Initiative for Shoreline Habitats and Tangible Incomes (MISHTI)

- **Launched in** – 2023.
- **Aim** – *Restoration of mangrove forests* by undertaking mangrove reforestation/ afforestation measures along the coast of India.
- **Coverage** – 540 sq. km of mangroves across 9 coastal states and 4 Union territories.
- **Time period** – 2023-2028 (5-years).
- **Focused on** – Sundarbans delta, Hoogly Estuary in West Bengal and other wetlands.
- **Implementation** - Funding will be done from State CAMPA, National CAMPA &MGNREGA and also from other sources.
- **Mangrove Alliance for Climate** – "MISHTI" comes after India joined the Alliance.
- It was launched during the 27th Conference of Parties (COP27) of the United Nations Framework Convention on Climate Change held in Egypt in November 2022

Digital Tree Aadhaar programme

- **Launched in** – 2021.
- **Launched by:**
  - Jammu and Kashmir Forest Department.
  - J&K Forest Research Institute (JKFI).
- **Objective** – To *conserve the iconic Chinar trees*, a symbol of the region's cultural and ecological heritage.
- It includes geo-tagging each tree with QR codes to record vital information, such as location, health and growth patterns.

PM Suryaghar Muft Bijli Yojana.

- **Launched in** – 2024.
- **Aim** – To *increase the share of solar rooftop capacity* and empower residential households to generate their own electricity.
- It is the *world's largest* residential rooftop solar initiative.
- **Time period** – Till 2026-27.
- **Implemented by** – A National programme Implementation Agency (NPIA) at the National level and by the State Implementation Agencies (SIAs) at the state level.
- **Working** – To provides for a subsidy of *60%* of the solar unit cost for systems up to *2kW capacity*.
- *40%* of additional system cost for systems between *2 to 3kW capacity*.

Mukhyamnatri Yuva Udyami Vikas Abhiyan (MYUVA)

- **Launched in** – *2024.*
- **Launched by** – Uttar Pradesh.
- **Aim** – To make the *youth self-reliant and entrepreneurial* by providing interest-free loans.
- **Eligibility** – Aged 21-40 years.
- **Loan amount** – Up to Rs 10 lakh.

International Incoming Spoofed Calls Prevention System

- **Launched in** – *2024*.
- **Launched by**
- Department of Telecommunications (DoT).
- Telecom Service Providers (TSPs).
- It identifies and blocks the *incoming international calls* posing as Indian phone numbers.
- It is a tool that *blocked 90%* of all the incoming international calls which were identified as spoofed calls.
- **Spoofing** – It is when a caller *deliberately falsifies the information* transmitted to your caller ID display to disguise their identity.

Sanchar Saathi App & Portal

- **Concept** – It *reporting fraudulent calls* at the fingertips of the citizens.
- **Features** – It immensely enhances the ease of reporting any suspected fraud communications.
- It *allowing citizens to report* such incidents directly from their mobile phone call logs.

Draft Legal Metrology (Indian Standard Time) Rules, 2025

- **Aim** – One Nation, One Time.
- **Published by** – Legal Metrology Division.
- **Association with** – National Physical Laboratory (NPL) and India Space Research Organization (ISRO).
- **Nodal Ministry** – Ministry of Consumer Affairs, Food & Public Distribution
- **Rule** – It is a comprehensive rule *standardizing and mandating the use of Indian Standard Time (IST)* across India.
- **Feature** – It provides a unified and precise timekeeping framework for strategic, non-strategic, industrial and societal applications

Water Use Efficiency-Strategies for a Sustainable Future

- **Organized by** – Bureau of Water Use Efficiency (BWUE) and Indian Plumbing Association (IPA).
- **Nodal Ministry** – Ministry of Jal Shakti.
- **Concept** – It is a *one-day workshop* with a focus on the domestic water sector.
- **Role** – Low-flow fixtures and smart sanitary ware solutions in reducing water consumption.

Uniform Civil Code (UCC)

Uttarakhand becomes the 1st state to implement UCC from January 27.

- **UCC** – It is a call for the formulation of *One Law for India*.
- **Under** – *Article 44*.
- **Article 44** – It states that the State shall endeavour to secure a Uniform Civil Code for the citizens throughout the territory of India.
- **Aim** – To provide protection to vulnerable sections as envisaged by Ambedkar including women and religious minorities.
- **Feature** – Applicable to *all religious communities* in matters such as marriage, divorce, inheritance and adoption.

Village Water and Sanitation Committee (VWSC)

- **Umbrella of** – Jal Jeevan Mission (JJM).
- **Under** – State Panchayat Raj Act.
- **Recognized by** – Gram Sabha.
- **VWSC –** It play a lead role in planning, implementation, management, operation and maintenance of in-village water supply infrastructure.
- **Objectives** – Assist Village Panchayat in effective management of water supply and sanitation facilities.
- Forum for community involvement in water and sanitation issues.
- Link between the Village Panchayat and users of water and sanitation installation.

Bhashini

Tripura became the 1st North East State (NES) to sign MoU with Bhashini.

- **Launched in** – *2022*.
- **Under** – National Language Technology Mission.
- **Concept** – It is an AI-tool designed to *break the barrier between the diverse languages* that people speak across the country.
- **Aim** – To provide *technology translation services* in 22 scheduled Indian languages.
- **Tool used** – Artificial Intelligence (AI) and Natural Language Processing (NLP).
- It uses *voice as a medium.*

Pradhan Mantri Kisan Sampada Yojana (PMKSY)

- **Launched in** – *2017*.
- **SAMPADA** – Scheme for Agro-marine processing and Development of Agro-processing Clusters.
- SAMPADA renamed as Pradhan Mantri Kisan SAMPADA Yojana (PMKSY).
- **Nodal Ministry** – Ministry of Food Processing Industries (MoFPI).

- **PMKSY** – It is a comprehensive package in creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet.

Waqf

- **Waqf** –It is a *permanent dedication of movable or immovable properties* for religious, pious or charitable purposes and the transfer will benefit the needy.
- **Recognized by** – Muslim Law.

Waqf Asset Management System of India (WAMSI)

- **WAMSI** – It is an e-Governance initiative and an *on-line system for searching waqf properties* in their area & their status.
- **Nodal Ministry** – Ministry of Minority Affairs.
- **Objective** – To manage and maintain up-to-date status of Waqf Properties in India throughout their life cycles.

National Critical Mineral Mission (NCMM)

Union Cabinet has approved the launch of National Critical Mineral Mission (NCMM).

- **NCMM** – It will *cover all stages of the mineral value chain*, from exploration to mining, beneficiation, processing, and recovery from end-of-life products.
- **Objectives** – Intensify the exploration of critical minerals within the country and in its offshore areas.
- To create a *fast-track regulatory approval process* for critical mineral mining projects.
- To encourage Indian Public Sector Undertakings (PSUs) and private sector companies to acquire critical mineral assets abroad.

Ethanol Blended Petrol (EBP) Programme

- **Launched in** – *2003*.
- **Nodal Ministry** – Ministry of Petroleum and Natural Gas.
- **EBP** – It implemented throughout the country except Union Territories of Andaman Nicobar and Lakshadweep islands.
- Oil Marketing Companies (OMCs) *sell petrol blended with ethanol up to 20%.*
- **Aim** – Target of 20% blending of ethanol with petrol by 2025.
- **Features** – To promote use of indigenously produced Bio-Ethanol as transportation fuel along with Petrol (Motor Spirit or Gasoline).
- To reduce Carbon Dioxide CO_2 emission as well as reduce import of fossil fuel.

Mitigation Project on Lightning Safety

A High-Level Committee (HLC) has approved the Mitigation Project on Lightning Safety.

- **Objectives** – To mitigate lightning Risk in *50 heavy lightning prone districts in 10 states*.
- **10 states** – Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Uttar Pradesh and West Bengal.
- **Funds** – From National Disaster Mitigation Fund (NDMF).

Assistance to Drought Prone Areas

High-Level Committee (HLC) has approved project for catalytic assistance.

- **Objective** - To 12 most drought prone states.

- **12 states** – Andhra Pradesh, Bihar, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Telangana and Uttar Pradesh.
- **Funded by** – National Disaster Mitigation Fund (NDMF).

Mitigation Scheme for Forest Fire Risk Management

Union Minister has approved the Mitigation Scheme for Forest Fire Risk Management.

- **Objective** – To *transforming the forest fire management* approach in the country.
- **Implemented in** – 144 high-priority districts in *19 states*.
- **19 states** – Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Manipur, Maharashtra, Mizoram, Madhya Pradesh, Meghalaya, Nagaland, Odisha, Tamil Nadu, Telangana and Uttarakhand
- **Funded by** – National Disaster Mitigation Fund (NDMF) & National Disaster Response Fund (NDRF).

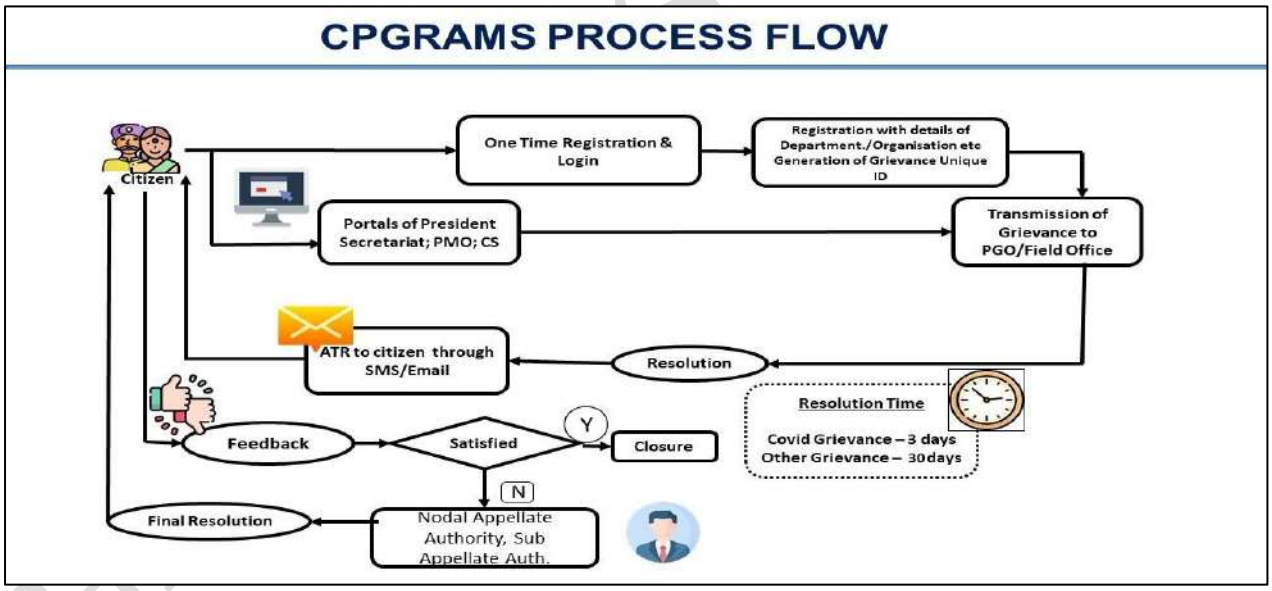
4. GOVERNMENT POLICIES AND INTERVENTIONS

4.1 Centralized Public Grievance Redress and Monitoring System (CPGRAMS)

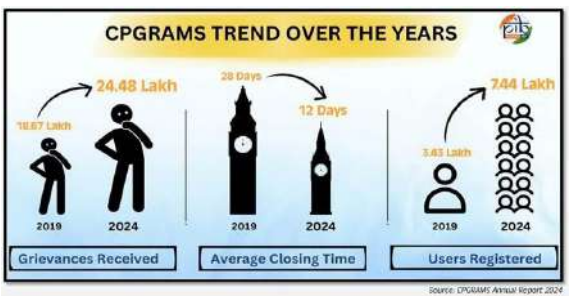
Why in News?

Recently, the Centralized Public Grievance Redress and Monitoring System (CPGRAMS) successfully resolved over 70 lakh grievances from 2022-2024.

- **CPGRAMS** – It is a 24*7 online platform for citizens to ***lodge their grievances to the public authorities*** on any subject related to service delivery.



- **Launched in** – *2007*.
- **Monitored by** – Department of Administrative Reforms and Public Grievances, Ministry of Personnel, Public Grievances & Pensions.
- **Coverage** – It connects 92 Central Ministries, Departments and Organizations with 36 States/UTs.
- **Supported by** – Over 73,000 active subordinate users.
- **Organizations** – 96,295 registered.
- **Compliant filing** – Citizen can file complaints through the *web portal or mobile app or UMANG app.*



- Each complaint receives a *unique registration ID*, allowing users to track its progress.

- **Tracking** - *My Grievance app* serves as an independent platform for filing and tracking complaints.
- **Grievance Redressal timeline** – ***21 days***.
- **Appeal mechanism** – If a citizen is dissatisfied with the resolution, they file an appeal once the grievance is closed.

*From 2022 to 2024, the system enabled the resolution of **70,03,533 grievances** and mapped 1,03,183 Grievance Redressal Officers (GROs) as on 31 October 2024.*

- **Matters not treated as Grievance**
  - Right To Information (RTI) Matters
  - Court related / Subjudice matters
  - Religious matters
  - Suggestions
  - Service matters of Government employees.
- **Policy Guidelines 2024** – Ensuring quicker resolutions & better citizen engagement.

10-Step Reforms	
Integrated Platform	Whole of Government Approach
Nodal Officers	Feedback Call Centre
Grievance Cells	Grievance Redressal Assessment Index
Reduced Timelines	Training and Capacity Building
Escalation Process	Regular Review

Initiatives

- **4th Sushasan Saptah & Prashasan Gaon ki Ore Campaign** – It aims to resolving public grievances and improving service delivery.
  - Service delivery – 2.9Cr applications disposed.
  - State portals – 14 lakh grievances redressed.
  - CPGRAMS – 3.4 lakh grievances redressed.
- **NextGen CPGRAMS** – Building on *CPGRAMS 7.0*, offer features like grievance filing via WhatsApp/Chatbot, voice-to-text lodging, instant alerts and auto-escalation.
- It is set to launch on *1st July 2025*.

4.2 UDISE+ Report

Why in News?

Recently, the Unified District Information System for Education Plus (UDISE+) Report enrolment data has stayed around 26 crores.

- **UDISE+ Report** – It is a report from Unified District Information System for Education Plus initiative.
- **Prepared by** – Department of School Education & Literacy (DoSE&L).
- **Released by** – Ministry of Education (MoE).
- **Based on** – Voluntary uploading of data by the schools having active UDISE+ codes.
- **UDISE+ code** – It is allotted to a recognized school by the Central Government based on the recommendation of the respective State/UT Government where the school is located.

Unified District Information System for Education Plus (UDISE+)

- It is *one of the largest Management Information Systems (MIS).*
- **Aim** – To facilitate online uploading of data at school level with inbuilt validation checks and the subsequent data verification at the Block, District and State level.
- It becomes truly "*One Nation One Database*".
- **Data** – It captures data for more than 60 fields for each student.
- **Child Aadhaar**– They were collected on the voluntarily basis.

- **EID** – A separate unique Educational ID (EID) for every student created in the UDISE+ portal which covers each and every child across the country.

UDISE+ Report 2023-2024

*The **School Education system** in India is one of the largest in the world comprising more than 1.47 million schools, 9.8 million teachers, and over 248 million students from varied socio-economic backgrounds.*

- It had the *cutoff date as on 31st March 2024.*
- It is in alignment with the recommendations of National Education Policy, 2020 (NEP 2020).
- It focuses on individual student for the *1st time at the national level.*
- **Coverage** – It covers all States /UTs except Tamil Nadu and West Bengal as they both directly feed data into UDISE+ portal of DoSE&L.
- **Data collection** – More than 19.7 crore students provided Aadhaar numbers voluntarily.
- **Total enrolment** – 24.8 Crore, a *drop over by 1 crore from 2018-19*.

*TamilNadu and West Bengal are the two States that maintains their **own Management Information Systems (MIS)** and provides bulk data link to UDISE+ portal of DoSE&L.*

- It includes a drop in enrolment of both boys and girls students.
- **Drop in enrolment** - Bihar, Uttar Pradesh and Maharashtra saw among the highest drop in enrolments.

4.3 Integrated Command and Control Centre (ICCCs)

Why in News?

According to a recent study by Indian Institute of Management (IIM), the Integrated Command and Control Centre (ICCC) created safe environment for women across 93 smart cities.

- **ICCCs** – It is the real-time monitoring systems *operationalized in 100 the Smart Cities.*
- It works as the brain and nervous system for city operations.
- **Launched in** – *2015,* by Ministry of Housing & Urban Affairs.
- **Umbrella Scheme** – Smart Cities Mission (SCM).
- **Aim** – To enable collation of information and collaborative monitoring, thus helping in the analysis of data for quicker decision making.
- **Integrated departments** – Police, Traffic Police, Health, Water, Solid Waste management, Irrigation department etc. have been integrated with ICCCs.
- 30 out of 100 smart cities have the following in traffic and transportation management
- Adaptive Traffic Control System (ATCS), Integrated Traffic Management System (ITMS), Red Light Violation Detection (RLVD) & Automatic Number Plate Recognition System (AnPR).
- **Intelligent operations capability** – It shall ensure *integrated data visualization,* real-time collaboration and deep analytics.
- **Significance** – It have been successful in improving *surveillance*, enhancing *safety and security of citizens,* preventing and resolving crimes etc.

Study Findings

The national level study has focused on smart cities of Chennai (Tamil Nadu), Nagpur (Maharashtra), and Tumakuru (Karnataka) for detailed primary impact assessment.

- 93 smart cities had the installation of *over 59,802 CCTV cameras and emergency call boxes* in the country.
- **Chennai and Tumakuru** – Leveraged advanced monitoring systems, integrating safety cameras with ICCCs.
- **Nagpur** – *14% decline in overall crime* rates post-implementation of surveillance measures.
- Women in these 3 cities increased confidence in assessing public spaces.

4.4 ONDC & its Achievements

Why in News?

Recently, the Prime Minister has praised the transformative impact of the Open Network for Digital Commerce (ONDC) on India's e-commerce landscape.

Open Network for Digital Commerce (ONDC)

- **ONDC** – It is an initiative to promote an open e-commerce network that connects shoppers, platforms and retailers.
- **Launched in** – 2021, by Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry.
- **Vision** – To democratise e-commerce in India
- **Aim** – To create an inclusive e-commerce environment through an open protocol developed on open-source specifications, making it independent of any one platform.

3 Major Components		
Buyer Apps	**Seller Apps**	**ONDC Gateways**
Applications that interact with *demand*-layer goods and services.	Applications that interact with *supply*-layer goods and services.	Applications that *orchestrate* buyer and seller services.
Example: Chatbots, user-based apps and voice assistants.	**Example**: Receiving buyer requests, fulfilling orders, publishing goods and services catalogs.	**Example**: Location-based buyer discovery apps like Magicpin.

- **Drives growth** - It has facilitated over 150 million transactions
- **Drives inclusivity** – Network now boasts more than 200 participants, including sellers, buyers, and service providers.
- Buyers from more than 1,100 cities and towns have engaged with the network.
- **Access to wider customer base** - *7 lakh sellers* and service providers from over 600 cities and towns.
- **Empowered farmers** - More than *7,000 farmer producer organizations (FPOs)*, representing 35 lakh farmers, have been onboarded.
- It aligns with ONDC's goal of bridging the gap between rural and urban markets.
- **MSME growth** – It has placed a strong emphasis on fostering the growth of small and medium enterprises (SMEs) through initiatives like the MSME TEAM scheme.

4.5 Faral Sakhi

Why in News?

Recently, the Faral Sakhi initiative was launched by Mira Bhayandar Municipal Corporation (MBMC) to empower women entrepreneurs.

- **Faral Sakhi** – It is a flagship initiative, aimed at *empowering women entrepreneurs* in the city of ***Mira Bhayandar, Maharashtra***.
- **Aim** – To create permanent employment opportunities for women by engaging them in the ***production and sale of traditional festive snacks ('Faral')***.
- **Launched by** – Mira Bhayandar Municipal Corporation (MBMC), in collaboration with Women Entrepreneurship Platform (WEP).
- **Technical training** – 25 women from Mira Bhayandar have been selected to receive technical training in business operations.
- The training is facilitated by the Centre for Education, Governance, and Public Policy (CEGP Foundation).

3 Guiding Principles of WEP	
Iccha Shakti	Power of motivation to start & scale business.
Gyaan Shakti	Power of knowledge to overcome information asymmetry.
Karma Shakti	Power of action through handholding & support.

- **Supports local economy** – This initiative equips participants with essential skills and knowledge to establish sustainable businesses, contributing significantly to the local economy.
- **MBMC** – Has established a *central kitchen* that allows women from self-help groups (SHGs) to produce festive snacks ('Faral') professionally.
- **Award to Reward (ATR) initiative of WEP** – Faral Sakhi initiative was unveiled the ATR.

Women Entrepreneurship Platform (WEP)

- **Focuses** – On empowering women entrepreneurs by addressing information gaps and providing support across critical areas such as:
- Access to finance, market linkages, training and skilling, mentoring and networking, compliance and legal assistance and business development services.
- An initiative of ***NITI Aayog***.
- ***Award to Reward initiative*** is a component under it.
- Over **30,000** women entrepreneurs already engaged with Women Entrepreneurship Platform (WEP).

4.6 Challenges in Information Commissions

Why in News?

Recently, the Supreme Court (SC) slammed the delay shown by the Centre and States in appointing Information Commissioners.

- **Issues in CIC** – Central Information Commission (CIC) has *8 vacancies* in the posts of the Information Commissioners.
- It has *23,000 pending appeals* filed by citizens seeking information from various government departments.
- **Issues in State IC** – Several Information Commissions in States have been *defunct since 2020*.

*In **Jharkhand,** where the lack of a Leader of Opposition (LoP) in the Vidhan Sabha was delaying appointments to the State Information Commission, which had been lying defunct since 2020 with over 8,000 appeals pending.*

- *Some have stopped accepting petitions* under the Right to Information (RTI) Act.
- **Supreme Court Direction** – It directed the Department of Personnel and Training to file an affidavit in 2 weeks specifying timelines
  - For completion of the selection process
  - For the selection committee to finalise its recommendations
  - For the notification of the appointments of the 8 Information Commissioners to the CIC.
- It also directed them to disclose the constitution of the search committee & a list of the candidates who had applied for the posts.

*For State Information Commission, the **Appointments Committee** will be headed by the Chief Minister. Other members include the Leader of the Opposition in the Legislative Assembly and one Cabinet Minister nominated by the Chief Minister.*

Central Information Commission (CIC)

- It is a ***statutory authority***.
- **Established in** – *2005*, under Section-12 of RTI Act of 2005.
- **Objectives**
  - To receive and *inquire into complaints* from any person.
  - To receive and decide upon the 2nd appeals from any citizen.
  - To perform the duty of Monitoring and Reporting.

- **Powers –** It has the *same powers vested in a civil court* while trying a suit under the Code of Civil Procedure, 1908.

Organizational Structure	
Composition	• Consists of Chief Information Commissioner • *Not more than 10* Information Commissioner
Appointment by	• President
Selection Committee	• Chaired by – Prime Minister. • Other members – Leader of Opposition in Lok Sabha, or if there is no such leader, then the leader of the single largest opposition group in Lok Sabha. • A Union Cabinet Minister nominated by PM.
Eligibility criteria	• Eminent person in public life with wide knowledge and experience in • Law, science and technology, social service, management, journalism, mass media, administration and governance.

4.7 EmpowHER Biz (Sapno Ki Udaan)

Why in News?

Recently, the EmpowHER Biz – Sapno Ki Udaan was launched to boost women entrepreneurship in retail.

- **Launched by** – ***Women Entrepreneurship Platform (WEP) of NITI Aayog*** in partnership with New Shop (India's largest 24/7 convenience retail chain) under its Award to Reward (ATR) program.
- **Launched for** – Women from Delhi, Punjab, Rajasthan, Uttar Pradesh, Haryana, Madhya Pradesh and Gujarat.
- **Aim** – To *empower women entrepreneurs* by equipping them with the skills and resources needed to succeed in the organized retail sector.
- To *create a robust retail ecosystem* that empowers women entrepreneurs and drives sustainable growth in the sector.

> ***New Shop*** *operates a network of over 200 round-the-clock convenience retail stores which are currently present in 35 cities across 18 states. It is committed to empowering over 10,000 entrepreneurs in India by 2030 as it continues to grow its footprint nationwide through a franchising model.*

- **Role** – It will offer *mentorship and comprehensive training*.
  - It will cover retail management, digital tools, financial literacy and business development to aspiring women entrepreneurs.
- It also provides for financial support, or the opportunity to join the New Shop franchising ecosystem
- **Selection** – *50 participants aged 18–35 selected*, will be selected through an online application process based on specific criteria.
- *Top 20 participants receive a 100% waiver* on New Shop franchise fees.

Women Entrepreneurship Platform (WEP)

• It is an aggregator platform.
• **Incubated in** – 2018, *by Niti Aayog*.
• **Aim** – To empower women entrepreneurs by overcoming information asymmetry and providing *continuum of support* across different pillars
  ○ Access to Finance
  ○ Market Linkages

- Training and Skilling
- Mentoring & Networking
- Compliance & Legal Assistance
- Business Development Services.

- It transitioned into a *Public-Private Partnership (PPP) in 2022*.
- **Partners** – Over 30 public and private sector partners.
- **Role** – It fosters collaboration to develop scalable and impactful programs that benefit women entrepreneurs.
- Since 2023, the *'Award to Reward' initiative under WEP* offers a plug and play framework for stakeholders to develop impactful programs.

4.8 Electoral Trusts

Why in News?

Supreme Court struck down electoral bonds last year, shifting political funding to electoral trusts.

- It is a Trust set up by companies with the sole objective to ***distribute the contributions*** received by it from other Companies and individuals to the political parties.
- **Qualification** - Under ***'The Electoral Trusts Scheme, 2013'***, any company registered under Section 25 of the Companies Act, 1956, can form an electoral trust.
- **Governed by -** The Companies Act, 1956, and the Income Tax Act, 1961.
- **Eligibility to donate -** Under Section 17CA of the Income-tax Act, 1961
  - Any citizen of India,
  - A company registered in India, or
  - A firm or Hindu Undivided Family or
  - Association of persons living in India, can donate to an electoral trust.

Among the 18 registered electoral trusts, the Prudent Electoral Trust (PET) stands out as the largest and most influential.

- It shall not accept contributions from
  - An individual who is not a citizen of India
  - A foreign entity whether incorporated or not
  - Other Electoral Trusts (approved under the Electoral Trusts Scheme)
  - Contributors without PAN
  - NRIs without a passport number
- **Renewal -** The electoral trusts have to apply for renewal ***every 3 financial years***.
- **Distribution of funds -** For administrative expenses, the Electoral Trusts are permitted to set aside a maximum of 5% of the total funds.
- They must donate ***95%*** of contributions received in a financial year to political parties registered under the Representation of the People Act, 1951.
- The contributors' PAN (in case of a resident) or passport number (in case of an NRI) is required at the time of making contributions.
- **Transparency -** Trusts are required to maintain detailed accounts of donors, including PAN details, donation amounts and payment modes.
- Unlike electoral bonds, these contributions are ***partially transparent*** as donor and recipient identities must be disclosed, albeit separately.
- **Reporting -** These records are audited annually, with reports submitted to the commissioner of income tax and the Election Commission (EC).

SHANKAR IAS ACADEMY

4.9 Diamond Imprest Authorization (DIA) Scheme

Why in News?

The Department of Commerce recently introduced the Diamond Imprest Authorization Scheme to support exporters.

- **Aim -** It aims to keep investments and jobs within the country, helping small and medium diamond exporters (MSMEs) compete globally.
- The initiative seeks to simplify and reduce the costs associated with importing and handling diamonds for exporters, further positioning India as a key player in the international diamond market.
- **Implementation -** It will come into effect on April 1, 2025.
- **Ministry -** Ministry of Commerce & Industry.
- **Eligibility** – It is open to exporters with Two Star Export House status (a recognition granted by the Directorate General of Foreign Trade) and above, with at least $15 million in exports annually.

India's gross exports of gems and jewellery in December 2024 stood at $1,967.98 million, marking a decline of 10.29% compared to the same period last year.

- **Features**
  - **Duty-free imports** - Exporters can import natural cut and polished diamonds of less than ***¼ carat*** (25 cents) without paying customs duty.
  - Including the products of semi-processed, broken, half-cut, etc.
  - **Export obligation** - Exporters must add ***at least 10%*** value to these diamonds before exporting them.
  - Diamonds are to be imported under Actual User Conditions.
  - Exports will be against payment in Free Foreign Exchange.
- This move comes in response to policies in diamond-producing countries like Botswana, Angola and Namibia, where manufacturers must process diamonds locally.

4.10 Coronation Bridge

Why in News?

After more than 10 years, the West Bengal government recently gave its nod to the Teesta Bridge project, replacing the Coronation Bridge.

- The Coronation Bridge Built in West Bengal spans across the ***Teesta River***.
- It was built in the memory of ***King George VI and Queen Elizabeth*** from 1937 to 1941.
- Its foundation stone was laid by then Bengal Governor ***John Anderson.***
- It is also known as the Sevoke Roadway Bridge or Baag Pool.
- It is the only one British-era bridge on the Teesta linking West Bengal and Sikkim.
- **Architects -** A.C. Dutt, S.K. Ghosh and K.P. Roy.
- The bridge was designed by ***John Chambers***, the last British executive engineer in the Darjeeling PWD Division.
- The bridge has a steel arch design, its deck is built of steel girders and its arches are supported by concrete piers.
- The bridge was damaged in the 2011 earthquake, after which the Centre started planning an alternative bridge to increase connectivity between the two states on this strategically important route.
- There were some land acquisition problems; thus, it was delayed by 12 years.

Teesta is Bengal's second-longest river after the Ganga.

4.11 Spousal Open Work Permits (SOWP) in Canada

Why in News?

Canada's Spousal Open Work Permit policy has been updated, allowing spouses of international students to apply for work permits while studying.

- SOWP program provide opportunities for their ***spouses*** to apply for an open work permit.
- Thus, spouses have the opportunity to ***work full-time*** for the duration of their partner's study in Canada.
- Students who meet the eligibility criteria set by *Immigration, Refugees, and Citizenship Canada (IRCC)* can apply for a spousal visa.
- **Eligible academic programs**
    - PhD programs
    - Master's degree programs (with a minimum duration of 16 months) and
    - professional courses like Doctor of Dental Surgery,
    - Bachelor of Law (LLB),
    - Pharmacy (B. Pharmacy, PharmD),
    - Doctor of Veterinary Medicine (DVM),
    - Doctor of Medicine (MD),
    - Bachelor of Nursing (BN),
    - Bachelor of Engineering (BEng),
    - Doctor of Optometry (OD),
    - BSE Pharmacy,
    - Bachelor of Education (BEd).
- **Recent Changes -** International students can now apply for a SOWP alongside their study permit application.
- If the student is already studying in Canada, their spouse can apply for an open work permit if their spouse is still in their home country.
- If the duration of the work permit is set to expire before the study period, they can apply for an extension to match the remaining duration of the study period.
- Once a student completes their studies in Canada, they may be eligible to apply for a Post-Graduation Work Permit (PGWP), which allows graduates to work in Canada for ***up to 3 years,*** depending on the length of their program.
- In such cases, the spouse may also be eligible for an open work permit under specific conditions.
- The spouse's eligibility depends on whether the student on PGWP is employed in certain sectors under Canada's Training, Education, Experience, and Responsibilities (TEER) system.
- Specifically TEER 0 or 1 occupations and in TEER 2 or 3 occupations sectors they should choose jobs with labour shortages or those linked to government priorities.
- E.g., Natural sciences, healthcare, construction, education, etc.
- For students who are not eligible under these specific programs, their spouse has a few other options.
- The spouse can apply separately for a study permit or a visitor visa and they need to show strong financial proof to prove they can meet the living expenses in Canada.

Other Important Topics

Mission Suraksha initiative

- It is also called as *Mission COVID Suraksha*, the IndianCOVID-19 Vaccine Development Mission.
- **Part of** – 3rd stimulus package, AtmanirbharBharat3. 0.
- **Objective** – For *promoting research and development* of Indian COVID-19 vaccines.

SHANKAR IAS ACADEMY

Nari Shakti Se Jal Shakti

- Nari Shakti Se Jal Shakti, meaning women power for water empowerment.
- It is a ground-breaking effort that is leveraging women's leadership in water conservation.
- Through Nari Shakti Se Jal Shakti, women mobilised entire communities to adopt water-saving practices, reduce wastage and protect natural water bodies.

School students enrolment

- According to the *Unified District Information System for Education Plus (UDISE+)*, the total enrolment of students in schools across India studying from grade 1-12, *dropped by over a crore* in 2023-24 as compared to 2018-19

Digitalisation of Schools in India

- **Functional computers** – *only 57.2%* of schools in the country.
- **Internet access** – *Only in 53.9%* of the schools.

PMAY-G program

- **Nodal ministry** - Ministry of Rural Development.
- **Extension** – It aims to construct *2 crore additional houses by 2029*, with revised eligibility rules.
- The budget for housing schemes for 2024-25 is the highest at Rs 54,500 crore.
- **Sanctioned houses** – As of December 2024, only 31. 65 lakh houses had been sanctioned against a target of 42 lakh.

Agriculture production

- **Food grain production** – For 2023-24 is recorded at 332.30 million tonnes.
- **Horticultural production** – Stands at 352.23 million tonnes, according to the third advance estimates.

Minimum Support Price

- Government has increased the MSP for all mandated Kharif, Rabi and other commercial crops.
- Fixing of MSP at one-and-a half times the cost of production.

Institutional credit for agriculture sector

- The ground-level credit disbursement in agriculture has experienced a significant increase of 349%, including both short-term and long-term credit.
- **Kisan Credit Card scheme** – Short-term credit investment through the Kisan Credit Card scheme has grown 270%.

National Beekeeping & Honey Mission (NBHM)

- **Launched** – Under the AatmaNirbhar Bharat initiative, aims to promote scientific beekeeping and achieve the 'Sweet Revolution.
- It focuses to establish infrastructure like Integrated Beekeeping Development Centres (IBDCs), Honey Testing Labs, Beekeeping Equipment Manufacturing Units and Custom Hiring Centres.

Mission for Integrated Development of Horticulture (MIDH)

- A *Centrally Sponsored Scheme* for the holistic growth of the horticulture sector covering fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa and bamboo.
- Under MIDH, Union Government contributes 60%, of total outlay for developmental programmes in all the states except states in North East and Himalayas, 40% share is contributed by State Governments.
- In the case of North Eastern States and Himalayan States, the Union Government contributes 90%.

National Mission on Edible Oils – Oilseeds (NMEO-Oilseeds)

- It aims to boost domestic oilseed production and achieve self-reliance in edible oils. With a financial outlay of Rs 10,103 crore, it will run from 2024-25 to 2030-31.

Sub-Mission on Agricultural Mechanization (SMAM) Scheme

- **Launched** – In 2014-15.
- **Objective** – Provides financial assistance for purchasing agricultural machinery and establishing Custom Hiring Centres (CHCs), High-Tech Hubs, and Farm Machinery Banks.

Crop Residue Management (CRM) Scheme

- Launched in 2018-19, supports Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, and Delhi in addressing air pollution and subsidizing machinery for crop residue management.

Extension Reforms (ATMA) Scheme

- ATMA, a *Centrally Sponsored Scheme*, presently is being implemented in 739 districts of 28 states & 5 UTs in the country.
- The scheme promotes decentralized and farmer-friendly extension system in the country.
- **Objectives** – To support State Government's efforts and to make available latest agricultural technologies and good agricultural practices in different thematic areas of agriculture and allied areas to farmers through different extension activities.

Climate resilient Varieties

- Climate resilient crop varieties of cereals, oilseeds, pulses, forage crops, fibre crops and sugar crops have been developed specially for extreme climate including.
- ICAR has recently released 109 climate resilient varieties which will help the farmers for its adoption based on agro climatic conditions.

PM Kisan Samman Nidhi

- **Launched** – On 24th February 2019.
- PM-KISAN is a central sector scheme to supplement the financial needs of land-holding farmers.
- **Financial benefit** – Of Rs. 6,000/- per year in 3 equal instalments every 4 months is transferred into the bank accounts of farmers' families.
- **Direct Benefit Transfer (DBT) mode** – PM-KISAN is one of the largest DBT schemes in the World.

Agriculture Infrastructure Fund (AIF)

- **Launched** – In 2020 with an allocation of Rs 1 lakh crore.
- It is a *Central Sector Scheme*.
- **Aim** – To provide medium to long-term debt financing for post-harvest management and community farming infrastructure projects.
- **Interest subvention** – Of 3% per annum on loans up to Rs 2 crore for up to 7 years.
- **Credit guarantee coverage** – For loans up to Rs 2 crore through the CGTMSE scheme.

Farmer Producer Organization Scheme

- **Launched** – On 29th February 2020.
- A *Central Sector Scheme* for Formation & Promotion of 10,000 FPOs.
- The Ministry of Agriculture & Farmers Welfare oversees its *implementation through 14 agencies*, including NABARD, SFAC, NAFED and others.

Namo Drone Didi Scheme

- **Launched** – On 30 November 2023.
- Namo Drone Didi is a *central sector scheme* aiming to *empower women-led Self-Help Groups (SHGs)* by equipping them with drone technology to provide agricultural services.
- It provides for *providing rental services* to farmers for agriculture purpose (application of liquid fertilizers and pesticides for the present).
- In 2023-24, 500 drones were procured (from own resources) and distributed by Lead Fertilizer Companies (LFCs).
- The scheme also offers sustainable business opportunities, with SHGs earning at least Rs 1 lakh annually.

Per Drop More Crop (PDMC)

- **Launched** – In 2015-16.
- PDMC scheme aims to *enhance water use efficiency* at the farm level through *micro-irrigation technologies* like Drip and Sprinkler systems.
- Initially implemented under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), it is *now part of Rashtriya Krishi Vikas Yojana (RKVY)* from 2022-23.
- **Financial assistance** – Of 55% to small and marginal farmers, and 45% to others, for micro-irrigation installation.
- From 2015-16 to 2024-25 (December 2024), approximately 95 lakh hectares have been covered.

Pradhan Mantri Fasal Bima Yojana (PMFBY)

- **Launched** – In 2016.
- PMFBY provides comprehensive *coverage against crop losses* due to natural calamities and unforeseen weather events.
- Over Rs 1.70 lakh crore in claims have been paid under the scheme.
- **DigiClaim** – Introduced in Kharif 2023, ensures transparency in claims by directly transferring payments to farmers via the National Crop Insurance Portal using the PFMS platform.
- The Krishi Rakshak Portal (KRPH) and a dedicated toll-free helpline (14447) have been set up for efficient grievance redressal, allowing farmers to track complaints and ensuring resolution within a specified timeframe.

e-NAM Platform

- eNAM is a *pan-India electronic trading portal* which networks the existing APMC mandis to create a unified national market for agricultural commodities.
- **Small Farmers Agribusiness Consortium (SFAC)** – Is the lead agency for implementing eNAM under the aegis of Ministry of Agriculture and Farmers' Welfare, Government of India.

Digital Agriculture Mission

- **Announced** – In the *Union Budget 2023-24*, the government announced the *development of Digital Public Infrastructure (DPI) for agriculture*, further augmented in the 2024-25 Budget.

- **Comprehensive data on farmers** – Including demographic details, land holdings and crops sown, integrating state and central government data for innovative, farmer-centric services.
- **3 key Digital Public Infrastructure (DPI)** – AgriStack, Krishi Decision Support System (DSS) and Soil Profile Mapping.
- **AgriStack** – Will create digital IDs for 11 crore farmers and launch a nationwide Digital Crop Survey.
- **DSS** – Will integrate geospatial data on crops, soil, weather, and water, while soil profile maps will cover 142 million hectares.

Soil Health & Fertility Scheme of Rashtriya Krishi VikasYojana (RKVY)

- **Launched** – On 19th February 2015.
- The Soil Health Card (SHC) and Soil Health Management (SHM) programs assist state governments in issuing SHCs to farmers.

National Mission on Natural Farming (NMNF)

- **Launched** – On November 25, 2024.
- Promote *natural farming* in mission mode across the country as a standalone *Centrally Sponsored Scheme*.

Chintan Shivir 2025

- It is a *national review conference*, a platform to foster dialogue and cooperation between different stakeholders.
- **Hosted by** – *Ministry of Women and Child Development*.
- **Objective** – To review the work of the Ministry and evolve an action plan to implement the "Vision 2047".
- To discuss challenges hindering the development and welfare of women and children across the nation and *devise optimal solutions.*

5. INTERNATIONAL RELATIONS

5.1 Island Development Agency (IDA) and its Initiatives

Why in News?

Recently, the union home minister chaired the 7th meeting of the Island Development Agency (IDA) in New Delhi.

- **IDA** – It is the nodal agency created for ***holistic development of Islands.***
- **Established in** – *2017*, by Ministry of Home Affairs.
- **Vision** – To *develop India's maritime economy* while preserving the natural eco-system of remote islands.
- **Activities** – *Concept Development Plans and Detailed Master Plans* are prepared for identified islands with principles of
  - Sustainability, People's participation, Eco-System preservation and Determination of carrying capacity.
- **7th Meeting of IDA**
- It *reviewed the progress* of ongoing development initiatives in the Andaman and Nicobar Islands and Lakshadweep.
- It underscored the importance of *advancing solar and wind energy initiatives* in the Andaman and Nicobar Islands and Lakshadweep.
- It emphasized the need for a holistic approach to infrastructure projects in both island groups.
- It called on all concerned central ministries to collaborate on initiatives related to tourism, trade, and other key sectors.

- **Solar energy initiatives** – Under the 'PM Surya Ghar' scheme, 100% solar energy panels should be *installed in all the houses in Andaman-Nicobar Islands and Lakshadweep*.
- It aims to achieve 100% renewable energy through solar panels and wind mills in both islands.

5.2 Kampala Declaration

Why in News?

The African Union Summit on the Comprehensive Africa Agriculture Development Program recently concluded in Kampala, with adopting the transformative Kampala Declaration for Africa's agri-food systems.

- **Kampala Declaration** – It solely *focusing on agricultural production to a broader "agri-food systems" approach*.
- This holistic view considers the entire food value chain, from production to consumption, encompassing factors like nutrition, sustainability, and resilience.
- **Adopted by** – African leaders at the Extraordinary African Union Summit on the *Comprehensive Africa Agriculture Development Program (CAADP)* held in Kampala, Uganda, on January 11, 2025.
- **Key Features of the Kampala Declaration**:
- **Sustainable and Resilient Agri-food Systems** – The core objective is to create a food system that is not only productive but also environmentally sustainable and resilient to shocks.
- **Addressing Malnutrition** – The declaration emphasizes combating all forms of malnutrition, including undernutrition (stunting, wasting), micronutrient deficiencies, and even rising obesity rates.
- **Climate-Smart Agriculture** – Promoting climate-resilient agricultural practices is crucial. This includes adopting climate-smart technologies, improving water management, and enhancing soil health.
- **Intra-African Trade** – Boosting intra-African trade in agricultural products is seen as key to improving food security and economic growth.

> ***Malabo Declaration*** *is the previous framework for African agricultural development, fell short of its goals, particularly in eradicating hunger and malnutrition.*

- **Empowering Smallholder Farmers** – The declaration recognizes the critical role of smallholder farmers and aims to empower them through access to technology, markets, and finance.
- **Significance** – The strategy will also see *Africa reduce post-harvest loss by 50 %*, triple intra-African trade in agro-food products and inputs by 2035.
- It will also raise the share of locally processed food to 35% of agro-food GDP by 2035.
- The adoption of the strategy is seen as a pivotal moment that will lay the groundwork for agro-food systems across the continent, and enable countries to act.

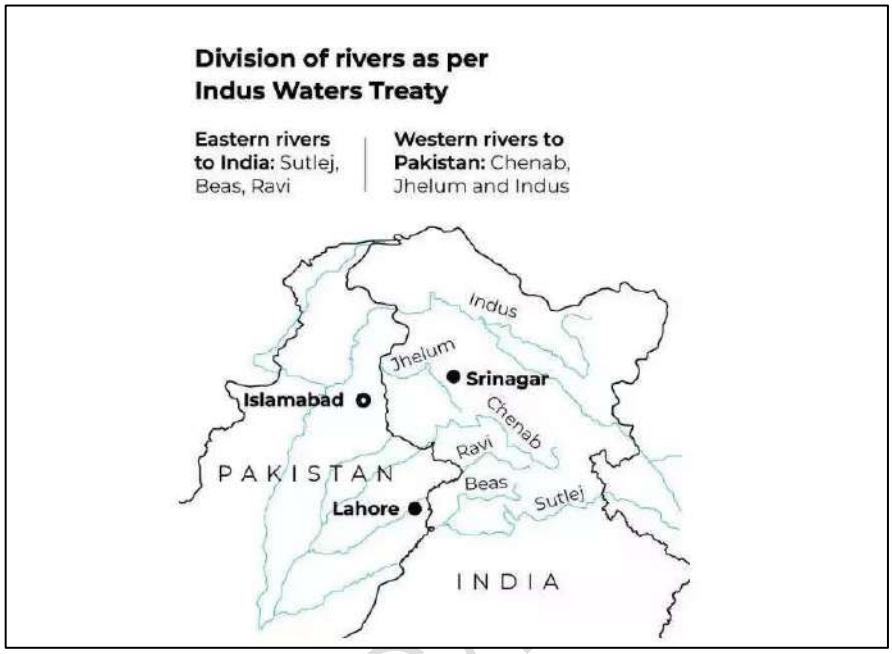
5.3 Indus Waters Treaty (IWT)

Why in News?

The Neutral Expert (NE) appointed under terms of the IWT decided that he was competent to decide on differences between India and Pakistan on the design of hydroelectric projects built on the Indus Treaty-rivers.

- The Indus Water Treaty was signed by ***India and Pakistan*** on September 19, 1960 to determine the distribution of the waters of the Indus and its tributaries.
- The negotiations were arranged by the ***World Bank.***
- Under the IWT,
    - India enjoys "unrestricted use" of the ***3 "Eastern Rivers"*** - Beas, Ravi, Sutlej, whereas
    - Pakistan controls the ***3 "Western Rivers"*** - Indus, Chenab, and Jhelum.
- India gets roughly 30% and Pakistan gets 70% of the water carried by the Indus River System.
- According to Article III (1) of the Treaty, "India is under obligation to let flow" waters of the Western Rivers to Pakistan.

- Both India and Pakistan have the *right to non-consumptive* use and rights of drainage issues and river conservation aspects.
- Article IX of the IWT provides for a graded 3-level dispute settlement mechanism, in which disputes are first decided at the level of the Indus Commissioners of India and Pakistan.
- Then it will escalated to the World Bank-appointed Neutral Expert, and only then to the PCA in The Hague.



The recent ongoing dispute

- Two hydroelectric projects currently under construction in Jammu &Kashmir in India, namely

1. The Kishenganga HEP on Kishenganga, a tributary of the Jhelum,
2. The Ratle HEP on the Chenab.

- Although they are "run-of-the-river" projects, which generate electricity without obstructing the natural flow of the river, Pakistan has repeatedly alleged that these violate the IWT.
- Pakistan asked the World Bank to facilitate the establishment of a Court of Arbitration to consider its concerns about the designs of the two hydroelectric power projects.
- India asked for the appointment of a Neutral Expert to consider similar concerns over the two projects.
- According to Article IX of the IWT it is now escalated to World Bank-appointed Neutral Expert.

Other Important Topics

Optional Practical Training (OPT) programme of U.S.

- It authorises *international students*, who are in the US on an F-1 visa, *to work for up to 12 months in an area* "directly related" to their major area of study.
- Indian students make up the largest international cohort in U.S.
- **Eligibility** - International students who are enrolled full-time for at least 1 academic year in the US can apply for OPT.
- **Pre-completion OPT** - Work before completing their studies, up to 20 hours a week while the academic session is underway, and full-time when the session is not.
- **Post-completion OPT** - Work after completing their studies, at least 20 hours a week or full-time.
- Students who have obtained a degree in Science, Technology, Engineering and Mathematics (STEM) can extend their post-completion OPT by another 24 months (Total 3 years).

RCIC scheme

- **RCIC** - Rural Community Immigration Class.
- **Launched by** – *Canada.*
- **Aim** – To provide a pathway for foreign nationals, including students, to *apply for PR* if they commit to living and working in designated rural communities.

- **Indian students in Canada** – They constitute the largest share of international students in Canada, accounting for *nearly 40%*.

World Economic Forum (WEF)

- **WEF** – A forum for various *stakeholders to meet and discuss* global and regional socio-economic issues.
- **Founded in** – 1971, by *Klaus Schwab*, a german professor.
- It was earlier known as *European Management Forum*.
- **Members** – Innovators, disruptors, niche market leaders and regional champions.
- It was the 1st non-governmental institution to initiate a partnership with China's economic development commissions in 1979.

World Economic Forum Annual Meeting 2025

- **Theme** – Collaboration for the Intelligent Age.
- **Held in** – Davos, Switzerland.
- **Period** – It hold its Annual Meeting at the end of January.
    - **Discussion about** – Inclusive growth, investment in social, physical & digital infrastructure and democratising technology.

6. ECONOMY

6.1 Export Inspection Council (EIC)

Why in News?

Recently, the Export Inspection Council (EIC) has initiated an assessment on food testing infrastructure for exports.

- **EIC** – It is the apex advisory body to the Government.
- **Established in** – *1963*, under section 3 of the Export (Quality Control and Inspection) Act, 1963.
- **Nodal agency** – Ministry of Commerce and Industry.
- **Vision** – To facilitate *worldwide access for Indian exports* to meet international norms.
- **Objectives** – To create an ***export inspection & certification infrastructure*** based on International Standards for Certification Authority in consonance with World Trade Organizations requirements.
- To instill confidence in importers as well as regulatory authorities of India's trading partners about quality and safety of products.
- **Role** – Notify commodities which will be subjected to quality control and/or inspection prior to export.
- Establish standards of quality for such notified commodities.
- Specify the type of quality control and/or inspection to be applied to such commodities.
- **Powers** – It exercises administrative control over the *5 Export Inspection Agencies (EIAs).*
    - EIAs are located at Chennai, Delhi, Kochi, Kolkata and Mumbai.
- Issue Certificates of origin to exporters under various preferential tariff schemes for export product.
- **Certification types**

- Consignment wise inspection
- Certification of quality of food items for export through installation of Food safety Management System in the food processing units.

- **International Recognitions** – It is recognized by *European Union, United States, Australia, Turkey, Korea, Japan and among others*.
- **Initiatives** – It is set to launch a user-friendly online portal integrating traceability modules, a Laboratory Information Management System (LIMS) and E-Health features.

6.2 Amrit Bharat Trains 2.0

The Ministry of Railways announced the launch of Amrit Bharat Trains Version 2.0.

- **Objectives** – To cater to low and middle-income families, offering a comfortable experience.
- To enhance comfort without increasing ticket costs significantly.

> *The **1st version of Amrit Bharat trains** was introduced in January 2024.*

- **Manufacturing** - 50 of these upgraded trains will be manufactured at the Integral Coach Factory (ICF) over the next 2 years.
- **Key Features** - The upgraded trains boast 12 notable enhancements.
  - **Semi-automatic couplers** – For smoother train operations.
  - **Modular toilets** – Improved hygiene & space optimization.
  - **Ergonomic seats and berths** – For added comfort.
  - **Emergency talk-back systems** – To ensure passenger safety.
  - **Continuous lighting systems** – For better visibility.
  - **Advanced pantry car designs** – To improve food service efficiency.
- **Affordable Travel for Low & Middle-Income Families** – To provide affordable, long-distance travel with features like
  - Charging points
  - Mobile holders
  - Water bottle slots even in general coaches.
- **Significance** – The upgraded trains are expected to set new benchmarks in the nation's rail transport system.

> ***Pamban Bridge** adheres to RDSO (Research Designs and Standards Organisation) standards and includes recommendations from international experts. It has received clearance from the Commissioner of Railway Safety.*

Other Important Topics

Non-performing assets (NPAs)

- *30% jump in gold loan NPAs in April-June on slowing economy, debts*.
- **NPAs** - They are loans or advances that have not been paid back on time, or that have stopped generating income for the lender.
- An asset is considered an NPA if the *interest or principal* payment is *overdue for 90 days or more*.
- **Substandard asset** - An asset that has been classified as an NPA for 12 months or less
- **Doubtful asset** - An asset that has remained in the substandard category for 12 months
- **NPA ratio** - It is calculated by dividing the non-performing assets by total loans and multiplying by 100.

Steel industry in India

- The steel industry contributes around *2% to India's GDP* (gross domestic product).
- The National Steel Policy, 2017, aims to increase India's steel production capacity from 122 million tonnes (MT) in 2015 to 300 MT by 2030.

India in Biopharma Sector

- It currently accounts for *60% of global vaccine production*.
- It is home to the 2nd largest number of USFDA-approved manufacturing plants outside the United States.

Unified Payments Interface (UPI)

- **UPI** – A digital payment system that allows users to make payments and transfers using a mobile app.
- **Launched in** – 2016.
- **Developed by** - National Payments Corporation of India (NPCI).
- **Regulated by** - Reserve Bank of India (RBI).
- **Function** – It allows users to send and receive money, pay merchants, and make peer-to-peer requests.
- **Transaction limit** – *Rs.1 lakh per transaction and 20 transactions per day*, but these limits may vary by bank and app.
- **Transaction charges** – They are usually free, but some banks may charge for specific services.

UPI Ecosystem in India

- It now accounting for nearly 8 in every 10 digital transactions.
- **UPI penetration** – It remains at *30% of the population*.
- **Duopoly** - Extreme market concentration of 2 3rd Party App Providers (TPAPs).
- *Phone Pe and Google Pay* together control over 85% of the total market share.

9 Years of Startup India

- **Launched in** – *2016* on January 16.
- **Aim** – To nurture innovation and catalyse the growth of startups across the country.
- **Recognition** - January 16 as *National Startup Day*.
- With more than *1.59 lakh startups* recognised by the Department for Promotion of Industry and Internal Trade (DPIIT) as of January 15, 2025.
- India has firmly established itself as the *3rd largest startup ecosystem in the world.*

Certificate of Origin (eCoO) 2.0

- **Launched by** – Directorate General of Foreign Trade (DGFT).
- **Nodal Ministry** – Ministry of Commerce & Industry.
- **eCoO 2.0** - It is a platform designed to simplify the certification process for exporters.
- The electronic filing of Non-Preferential Certificates of Origin become mandatory through this platform.

- **Feature** – It allowing exporters to request corrections to previously issued certificates through an easy online application process.

7. AGRICULTURE

7.1 Global Strategy for Resilient Drylands (GSRD) 2030

Recently, the Consultative Group on International Agricultural Research (CGIAR) has launched the CGIAR 2030 Global Strategy for Resilient Drylands (GSRD) at COP16 summit in Riyadh, Saudi Arabia.

- **Drylands** – Are areas with a scarcity of water that cover more than 40% of the Earth's land surface.
- **Global drylands** – It makes up 46% of the world's land area.
- It supports nearly half of the livestock and 44% of food systems are present in this region.
- It is home to some of the world's poorest and most climate vulnerable communities.
- It warms at a rate of 20-40% higher than other regions.
- The factors leading to dryness in this region are:
    - Rising temperatures,
    - Soil degradation,
    - Unpredictable rainfall patterns and
    - Exacerbate food insecurity.
- **Global Strategy for Resilient Drylands (GSRD)** – Aims to revolutionize dryland agriculture and nurture resilient livelihoods in dryland communities globally.
- It provides a roadmap to enhance food security, conserve biodiversity and build resilient livelihoods for the 2.7 billion people inhabiting drylands, particularly in Asia and Africa.
- It commits to a thriving and resilient future for the millions of people who depend on drylands for their food and livelihoods.
- **Launched by** – Consultative Group on International Agricultural Research (CGIAR).
- **Spearheaded by** – International Center for Agricultural Research in the Dry Areas (ICARDA) of CGIAR and International Crops Research Institute for the Semi-Arid Tropics (ICRISAT).
- The 5 key areas of focus by the strategy are:
    1. Adapting agro-food systems to climate change
    2. conserving biodiversity
    3. sustainably managing soil and water resources
    4. promoting healthy diets
    5. fostering inclusive development

Consultative Group on International Agricultural Research (CGIAR)

- It is a global research partnership for a food-secure future dedicated to transforming food, land, and water systems in a climate crisis.
- It is the world's largest public global agricultural innovation network.
- **Founded** – 1971.
- **Headquarters** – France.
- It works with partners in *6 major regions*.
- It is dedicated to reducing poverty, enhancing food and nutrition security, and improving natural resources.

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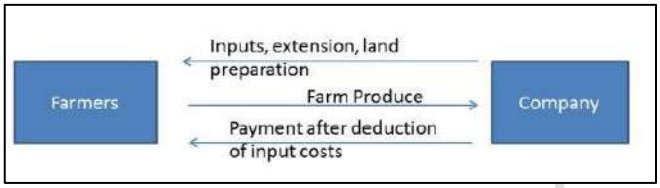
7.2 Contract Farming (CF)

Why in News?

Recently, India turned from an importer to an exporter of frozen French Fries through Contract Farming (CF).



- **Contract Farming (CF)** – It is an ***agreement between farmers (producers) and buyers***, where both agree in advance on the terms and conditions for the production and marketing of farm products.
- **Conditions of CF** – It usually specify the following:
    - Price to be paid to the farmer.
    - Quantity and quality of the product demanded by the buyer.
    - Date for delivery to buyers.
- **Contract** – It includes more detailed information on how the production will be carried out or if inputs such as seeds, fertilizers and technical advice will be provided by the buyer.
- **Products best suited** – There is *no restriction to the types of agriculture products,* but certain products are more suited for contract farming practices than others.

Advantages	Disadvantages
Farmers	
• Easier access to inputs, services and credit. • Improved production and management skills. • Secure market or access new markets. • Reduction of price-related risks. • More stable income: better planning. • Introduction of new technologies.	• Loss of flexibility to sell to alternative buyers when prices increase. • Possible delays in payments and late delivery of inputs. • Risk of indebtedness from loans provided by the buyer. • Environmental risks from growing only one type of crop. • Unequal bargaining power between farmers and buyers.
Buyers	
• Consistent supply of raw materials. • Products conform to quality and safety standards. • Reduced input and labour costs when compared to integrated production on company-owned land. • Better chance to secure products of a consistent quality. • Can help to overcome land constraints. • Production more reliable than open-market purchase.	• High transaction costs from contracting with many small farmers. • Risks of side-selling if farmers decide to break the contract and sell to others. • Potential misuse of inputs if farmers use seeds and fertilizers provided. • By the company for another purpose. • Loss of flexibility to seek alternative supply. • Reputational risks if things go wrong.

India's French Fries (FF) Exports

- **India's Potato production** – Around 60 million tonnes (mt) and is next only to China.
- **Varieties of potato for FF** – Santana, Innovator, Kennebec, Kufri Frysona and Kufri FryoM.
- **Exports** – Are mostly to Southeast Asia (Philippines, Thailand, Malaysia, Indonesia and Vietnam), Middle East (Saudi Arabia, UAE and Oman) and even Japan and Taiwan.

India has emerged as a major exporter of French Fries (FF), which owes much to companies procuring potato directly from growers and deepening farmer engagement.

India exported 135,877 tons of French Fries (FF) valued at Rs 1,478.73 crore. During April-October 2024, exports were 106,506 tonnes and worth Rs 1,056.92 crore.

Other Important Topics

National Bureau for Fish Genetic Resources (NBFGR)

- **Established in** – 1983.
- **Umbrella organisation** - Indian Council of Agricultural Research (ICAR).
- **Aim** – To undertake research related to the conservation of fish germplasm resources of the country.

Di-Ammonium Phosphate (DAP)

- DAP, the ***2nd-most consumed fertiliser*** in India after urea, is primarily used in crops such as wheat, mustard and pulses.
- It is an important nutrient for plant growth.
- It is supported by government subsidies under the *Nutrient-Based Subsidy (NBS) scheme*, based on their nitrogen, phosphorus, potassium and sulphur content.

Fruits Farmer Registration & Unified Beneficiary Information System (FRUITS)

- An initiative of *Karnataka* Government.
- It is a *software* which facilitates *single registration* using an Aadhar card and state's Bhoomi digitised land record system for authenticating ownership.
- In Karnataka, through FRUITS software, farmers can access benefits of schemes such as cash incentives under PM Kisan, payment for Minimum Support Price For crops and so on.

India's Coffee Production Boom

India ranks 7th largest globally in coffee production, exports reaching $1.29 billion in FY24.

- **Top buyers** – Italy, Belgium, and Russia.
- **Production** – *Arabica and Robusta* beans make up three-fourths of India's coffee production.
- Karnataka leads in production, contributing 248,020 MT in 2022-23.
- **Consumption trends** - Domestic consumption increased to 91,000 tonnes in 2023 from 84,000 tonnes in 2012.
- **Integrated Coffee Development Project (ICDP)** – It focuses on improving yields, expanding cultivation, and ensuring sustainability.

Livestock Conclave 2025

- **Theme** – Dialogue for Holistic Development of Livestock Sector in North East India.

- **Held in** – Shillong, Meghalaya.
- **Objectives** – To discuss strategies for the holistic development of the livestock & poultry sector in the *North East Region (NER) states*.
- To assess the present status and challenges, explore opportunities for growth and development through *value chain strengthening, technological interventions* and policy support.

National Co-operative Organic Limited (NCOL)

- **Established in** – *2023*, under the Multi-State Co-operative Societies Act, 2002.
- **Vision** – Sahakar se Samriddhi (Prosperity through Cooperation).
- **NCOL** – It is an umbrella organization for aggregation, procurement, certification, testing, branding and marketing of *organic products*.
- **Purposes** – It directly transfer profits from the sale of certified organic produce to farmers' bank accounts.
- It purchases all certified organic produce from farmers, sells it in the market.

Primary Agriculture Cooperative Credit Societies (PACS)

- **Established in** – *1904,* under the Cooperative Credit Societies Act, 1904.
- **Aim** – To improve the *overall state of agriculture*, uplift rural communities and promote inclusive economic growth.
- **PACS** – It is the *grass root level arms* of the short-term co-operative credit structure.
- **Features** – It deals directly with the,
    - Rural (agricultural) borrowers.
    - Give those loans and collect repayments of loans.
    - Undertake distribution and marketing functions.
- It serves as the *final link* between the ultimate borrowers and the higher financing agencies.

National Cooperative Development Corporation (NCDC)

- **Established in** – *1963*, by an Act of Parliament in 1963.
- **Functions** – Planning, promoting and financing programmes for production, processing, marketing, storage, export and import of agricultural produce, food stuffs and other notified commodities.
- Able to *finance projects in the rural* industrial cooperative sectors and for certain services.
- *Advanced loans and grants to State Governments* for financing primary and secondary level cooperative societies.

Tableau of Department of Animal Husbandry & Dairying (DAHD)

- **Theme** – Honouring India's Indigenous Cattle Breeds as Icons of Sustainable Rural Growth.
- **Nodal Ministry** – Ministry of Fisheries, Animal Husbandry and Dairying.
- It is the *1st time participation* of the ministry in the Republic Day parade.
- It depicting India's dominance as the highest milk-producing nation in the world.

Creation/Expansion of Food Processing & Preservation Capacities (CEFPPC)

- **Umbrella scheme** - Pradhan Mantri Kisan Sampada Yojana (PMKSY).

- **Objective** – It is creation of processing and preservation capacities and modernisation/ expansion of existing food processing units.
- The processing activities undertaken by the individual units covers a wide range of post-harvest processes.
- **Features** - Increase the level of processing
  - Reduce wastage
  - Induction of modern technology
  - Improving the quality of the end product.

HRMN-99

- **HRMN-99** – It is an apple variety developed by Hariman Sharma from Himachal Pradesh.
- **Patent by** – Protection of Plant Variety, Farmer Right Authority and Ministry of Agriculture.
- **Features** – It is striped *red-over-yellow skin*, soft and juicy pulp.
- Ability to produce up to *75 kg of fruit per plant annually*.
- Over 1 lakhs of saplings of the variety have been planted in all North East State (NES).
- It has empowered thousands of farmers across India.

8. ENVIRONMENT

8.1 Bacterial mixture for Plant Growth

Why in News?

In a recent study published in the journal Environmental Technology and Innovation, researchers have used the power of specific bacterial species to remove organic pollutants from soil.

- **Bacterial mixture** – Species from the ***genera Pseudomonas and Acinetobacter***, were good at *breaking down aromatic compounds* in contaminated soil and thereby improving soil and plant health.
- **Need** – Soil contaminants are toxic, can inhibit seed germination, reduce plant growth, yield and also accumulate in seeds and plant biomass.
- **Working** - They break down pollutants into simpler, harmless, non-toxic compounds.

> *Despite the use of fungicides & disease-resistant cultivars, fungal infections still cause **global crop losses of 10–23% annually**, with key calorie crops in India, like rice and wheat, particularly affected.*

- **Recover soil health** – They fertilise the soil and improve soil health.
- **Inhibit fungi** – They produce substances like *lytic enzymes and HCN (hydrogen cyanide)* that can kill or inhibit the growth of plant pathogenic fungi.
- These bacteria are eco-friendly and target only the harmful fungi.
- **Make nutrients accessible to plants** – They convert insoluble form of essential nutrients like *phosphorus and potassium, into soluble forms* and make them readily available to the plants.
- They produce *siderophores*, which help plants absorb iron in nutrient-limited environments.

- **Improves plant growth & health** – They produce high amount of *growth hormone called indoleacetic acid* (IAA).

- **Boosts yield** - They significantly boost the growth and yield of crops (wheat, mung bean, spinach, fenugreek, etc.) *up to 45-50%.*

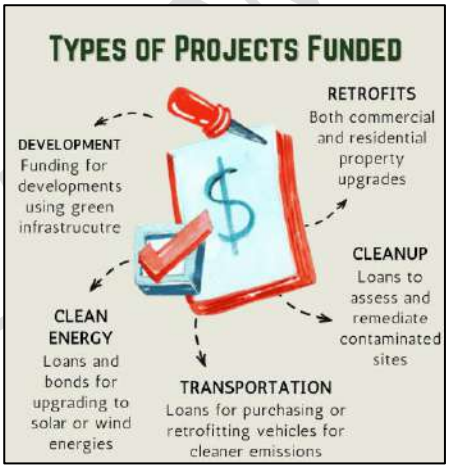
8.2 Green Bank

Why in News?

Recent study by the Council on Energy, Environment and Water (CEEW) and Natural Resources Defense Council India (NRDC) highlighted the need for a green bank in India.

- **Green banking** – It is a new financing trend where banks shift their investment strategies to *focus on sustainable technologies and environmentally-friendly initiatives.*
- **Primary objectives**
  - To protect the environment for future generations
  - To minimize paperwork and concentrate on electronic transactions
  - It became widely popular among banks following the Paris Climate Agreement in 2015 at Cop21 of UNFCCC.
- **Green banks** – It is a ***mission-driven institutions*** that use innovative financing to accelerate the transition to clean energy.
- Banks can also become green at a more local level by instituting ***eco-friendly lending policies.***
- **For example**, it could be like loans for electric vehicles and home solar electric systems or company-wide policies banning investments in harmful industries such as fossil fuels.
- Green banking is essentially the promotion of environmentally friendly practices and the reduction of the banking sector's carbon footprint.
- **In India** - The World Bank has recently announced a $1.5 billion funding for India in its efforts to develop energy from low carbon sources.

*The 29th Conference of Parties to the United Nations Framework Convention on Climate Change (COP29) ended with the assurance of **$300 billion** annually as climate finance. The demand of $1.3 trillion by the Global South for establishment of a 'Green Bank'.*



*The State Bank of India has adopted green banking as a policy and is the **1st green bank in India**, by going green and encouraging green energy projects.*

8.3 Multi-taxon Global Freshwater Fauna Assessment

Why in News?

The recently published study of multi-taxon global freshwater fauna assessment has identified Western Ghats as a hotspot of threatened freshwater species.

- **Study by** – *IUCN* (International Union for Conservation of Nature).
- **Global assessment** – It evaluates the extinction risk and conservation status for diverse freshwater fauna groups.
- It is the *1st ever multi-taxon global freshwater fauna assessment* for the IUCN Red List of Threatened Species.
- It is a comprehensive assessment involving contributions from *more than 1,000 species experts over 20 years.*
- It underscores the historical underappreciation of freshwater ecosystems in global environmental governance

Threats	Impact on Freshwater Species
Pollution	54%
Dams and water extraction	39%
Land-use	37%
Invasive species and disease	28%
Habitat loss and degradation	84%
Agricultural practices	74%
Logging	49%

- **Coverage** – 23,496 *Decapod crustaceans, Fishes and Odonates*.
- **Findings** – It revealed that a staggering 1/4th of the freshwater fauna are threatened with extinction, and a record of 89 confirmed and 187 suspected extinctions since 1500 AD.
- **Hotspots of Threatened Freshwater Species**
  - **Lake Victoria** - Kenya, Tanzania & Uganda.
  - **Lake Titicaca** - Bolivia & Peru.
  - **Wet Zone** - Sri Lanka.
  - **Western Ghats** - India.

*Climate change and severe weather events pose a substantial risk, impacting nearly **1/5th of threatened freshwater species.***

- **Threat in Western Ghats** – It harbours over 300 freshwater fish species of which *more than 1/3rd face extinction*.
- **Western Ghats** is the only region in Asia with 2 endemic families of freshwater fishes which are exclusively found in groundwater and subterranean systems.
- Among Indian States, *Kerala has the highest number of threatened freshwater fishes*, with 74 of its 188 fish species for which Red List assessments are available categorized as threatened.

*The iconic **Humpbacked mahseer**, a critically endangered megafish that can grow up to weigh 60 kg, was found in Western ghats.*

- **Periyar River** stands out as a critical conservation priority due to its high concentration of endemic and threatened freshwater fish species.

8.4 Nitrogen Contamination in Groundwater

Why in News?

An assessment of India's groundwater by the Central Ground Water Board (CGWB) found that several States are grappling with a serious problem of nitrate contamination.

- **Concerns** – The number of districts with excessive nitrate in their groundwater *rose from 359 in 2017 to 440 in 2023*.
- Nearly *56% of India's districts having excessive nitrate* in ground water, defined as having ***more than 45 mg/l (milligram per litre***).
- **Nitrogen in groundwater** – Although nitrate is the main form in which nitrogen occurs in groundwater, dissolved nitrogen also occurs in the form of
  - Ammonium (NH_4^+)
  - Ammonia (NH_3)
  - Nitrite (NO_2^-)
  - Nitrogen (N_2)
  - Nitrous oxide (N_2O)
  - Organic nitrogen.

Other Major chemical contaminants of Groundwater

- **Contaminants** – Arsenic, iron, fluoride and uranium.
- **Fluoride** – It exceeds the permissible limit in Rajasthan, Haryana, Karnataka, Andhra Pradesh and Telangana.
- **Uranium** – It exceeds 100 ppb (parts per billion) in Rajasthan and Punjab.

India's degree of groundwater extraction is 60.4%, or roughly the same as it has been through the years since 2009. About 73% of the blocks are in the 'safe' zone, meaning that they are replenished enough to compensate for water drawn out.

- **Vulnerable areas** - *Rajasthan, Karnataka and Tamil Nadu.*
- Maharashtra, Telangana, Andhra Pradesh and Madhya Pradesh also show notable levels of nitrate contamination.
- **Impact human health** – It leads to ***methemoglobinemia***, or a reduced ability of red blood cells to carry oxygen.

***Piezometers** measure groundwater levels and transmit the information digitally to a centralised location.*

- **Impact environment** – Once the nitrates in the groundwater rise to the surface and become part of lakes & ponds, *algal blooms emerge.*

SHANKAR IAS ACADEMY

8.5 Physico chemical pollutants in Arkavathi River

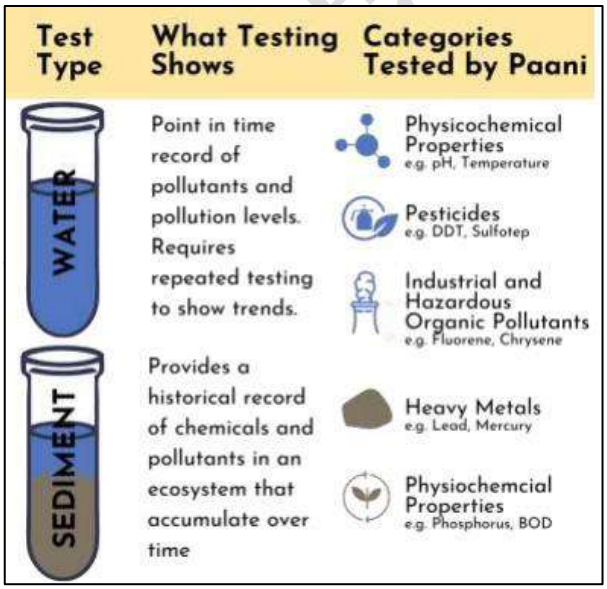
Why in News?

A report conducted by Paani.Earth in collaboration with the International Centre for Clean Water on pollution levels in the Arkavati has revealed alarming levels of physicochemical pollutants.

- **Report Findings –** The study quantifies the risks of emerging pollutants from seven sites along the Arkavathi and its tributary, the Vrishabhavathi River.
- Pollution levels in the Arkavati has revealed alarming levels of physicochemical pollutants, pesticides, heavy metals, and hazardous organic compounds.

The Central Pollution Control Board's Water Quality Criteria focus only on physicochemical properties of water rather than hazardous pollutants.

- The analysis focused on
    - 3 categories for water (Physicochemical Properties, Pesticides, and Industrial and Hazardous Organic Pollutants) and
    - 2 categories for sediment (Heavy Metals, and Physicochemical Properties).
- It exceeds both Indian and international standards and guidelines.
- **Notable High pollutants - Pesticides** - Harmful substances with health impacts such as ***Heptachlor and DDT*** found at levels as high as 25022 times US guidelines.
- **Heavy Metals** - Toxins such as ***Mercury*** found in sediment at levels up to 26 times above Canada's Sediment Quality Guidelines.
- **Industrial Pollutants** - ***Polycyclic aromatic hydrocarbons (PAHs)*** from industrial burning such as Dibenz[a,h]anthracene found at 3076 times US guidelines.
- **Nutrients** - Excessive ***phosphorus*** levels causing eutrophic conditions at all sites.
- **Health concerns** – It can cause severe risks to human and aquatic health, including cancer and hormone disruptions.



- Heavy metals also contribute to the development of antimicrobial resistance (AMR), posing an additional threat to public health and the environment.

8.6 Blue Carbon

Why in News?

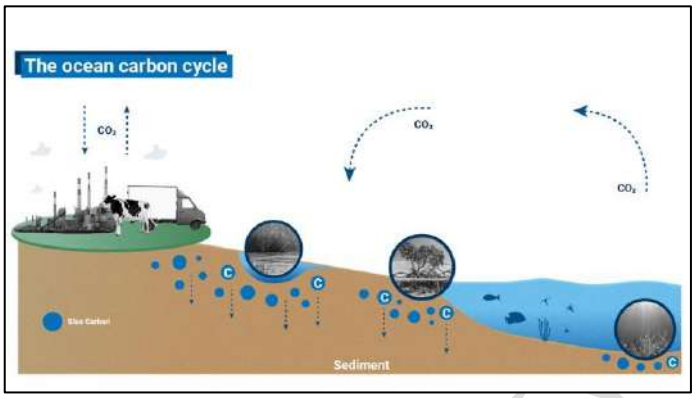
Current studies suggest that mangroves and coastal wetlands annually sequester carbon at a rate 10 times and store three to five times more carbon per equivalent area greater than tropical forests.

- Blue carbon is the term for carbon captured by the ***world's ocean and coastal ecosystems.***
- The world's mangroves, sea grasses and salt marshes together comprise 'blue carbon ecosystems.' They are nature's most effective carbon sinks.

Mangroves alone have the capacity to store more than 1,000 tons of carbon per hectare.

- It can be found on every continent ***except Antarctica*** and cover approximately 50 million hectares.
- Coastal ecosystems ***sequester and store more carbon*** per unit area than terrestrial forests and are now being recognized for their role in mitigating climate change.
- These ecosystems also provide essential benefits for climate change adaptation, including coastal protection and food security for many coastal communities.

- However, if the ecosystems are degraded or damaged, their carbon sink capacity is lost or adversely affected.
- The resultant carbon stored is released, resulting in carbon dioxide (CO2) emissions that contribute to climate change.
- Dedicated conservation efforts can ensure that coastal ecosystems continue to play their role as long-term carbon sinks.
- **IUCN involvement –** IUCN is involved in Blue Carbon initiatives through 2 main funding mechanisms
    - The Blue Natural Capital Financing Facility (BNCFF) and
    - The Blue Carbon Accelerator Fund (BCAF).



8.7 India's Forests Fires

Why in News?

Recently, the data showed that in the past 5 fire seasons, over 11 lakh fires incidents reported in India.

- **Ministry of Environment, Forest and Climate Change** – Mentioned that *4 states* have reported over *1 lakh forest fire incidents* each in the *last five forest fire seasons*.
- **4 States** – Odisha, Madhya Pradesh, Chhattisgarh and Maharashtra.
- They accounted for 4,73,834 forest fires, which constitutes approximately 43% of the total forest fire incidents in India.
- **India State of Forest Report (ISFR) 2021** – Over 36% of the country's forest cover is estimated to be vulnerable to frequent forest fires.
    - **2.81%** - Extremely fire-prone.
    - **7.85%** - Very highly fire-prone category.

India has reported a staggering 11,09,588 forest fires. Each year from November to June, forests across the country ignites, threatening ecosystems, wildlife and livelihoods.

- **ISFR 2023** – Around 275 million rural people in India depend on forests for their livelihood security.
- Communities residing near forested areas rely heavily on forests for Non-Timber Forest Products (NTFPs).
- **Major Factors** – Collection of *tendu leaves and mahua flowers* contributing to forest fires.
- *Shifting cultivation practices* adopted by local farmers, where an estimated 4.35 million hectares (mha) of forest area is affected by fires.
- **Reasons for fires** – Unsustainable exploitation of forest resources and coupled with increasing human activities threat to the balance of forest ecosystems.
- **Impacts** – It leads to loss of:
    - Human lives
    - Depletion of biodiversity
    - Habitat destruction
    - Reduced agricultural productivity
    - Landscape degradation
    - Disruptions to local livelihoods

8.8 Moringa oleifera, Mitigator for Harmful Algal Blooms (HABs)

Why in News?

A research team at Clarkson University recently published a study about a plant-based alternative to traditional chemical methods of combating Harmful Algal Blooms (HABs).

- The team's research focuses on using ***Moringa oleifera*** to combat the cyanobacterium that causes HAB known as ***Microcystis aeruginosa.***
- The team comparing it to the traditional chemical method of using aluminum salts.
- **Microcystis aeruginosa -** Microcystis aeruginosa cells, the cyanobacterium that causes HABs contain a family of potent toxins known as microcystins.

Flocculant is the substance that causes particles in liquid to clump together, and the clumped particles are called flocs.

- It can cause negative health effects in humans, from mild skin rashes to serious illnesses.
- They can also cause severe liver damage and even death in dogs and livestock.
- Any method used to treat harmful algal blooms must ensure that the cells remain intact to prevent the release of these toxins into the aquatic environment.
- **Moringa oleifera** - It is a ***Plant-based alternative*** for harmful algal bloom mitigation.
- The seeds of Moringa oleifera contain proteins that act as natural flocculants.
- Aluminum salts, such as alum (potassium aluminum sulfate) and polyaluminum chloride, are commonly used as flocculants in water treatment processes.
- They effectively aggregate particles, facilitating their removal from water.
- However, their use raises environmental concerns, particularly regarding the formation of toxic sludge.
- This sludge can contain soluble aluminum compounds, which may leach into water bodies, posing risks to aquatic life and potentially entering the food chain.
- **Advantages -** Moringa oleifera offers a biodegradable, plant-based alternative that is less polluting.
- Its use as a flocculant reduces the risk of toxic sludge formation and minimizes environmental impact.

8.9 Namdapha National Park

Why in News?

An elephant has been camera-trapped after 12 years, as the encroachment since 1996 blocked the jumbo migration route between Arunachal Pradesh and Myanmar through Namdapha National Park.

- It is India's easternmost tiger reserve and National park situated in the Changlang district of ***Arunachal Pradesh.***
- It is originally declared as a Wildlife Sanctuary in 1972 and a National Park and Tiger Reserve (15th Tiger Project) in 1983.
- The Namdapha protected area is wedged between Dapha Bum ridge of Mishmi Hills, of North Eastern Himalayas and Patkai Ranges.
- The reserve has a common boundary with Kamlang Wildlife Sanctuary (Lohit District).
- **Vegetation** - It consists of Northern Tropical Evergreen Forest, North Indian Tropical Moist Deciduous Forests, East Himalayan Moist Temperate Forests, Moist Alpine Scrub Forests.
- **River** - It lies along the ***Noa-Dihing river*** lies in the tropical rain forest.
- **Flora -** The *Pinus merkusi and Abies delavavi* are not found elsewhere in India.
- One of the rarest and endangered orchids, the ***Blue Vanda*** found here.
- The most famous local medicinal plant ***Mishimi Teeta (Copti teeta)***, is available here but its export has been banned.
- It is ***only park in the World*** to have the 4 Feline species of big cat namely
    - The Tiger (Panthera Tigris),
    - Leopard (Panthera Pardus),
    - Snow Leopard (Panthera Uncia) and
    - Clouded Leopard (Neofelis Nebulosa) and numbers of Lesser cats.

SHANKAR IAS ACADEMY

- **Primate species -** Assamese macaque, pig-tailed macaque, stump-tailed macaque and Hoolock Gibbons (Hylobates Hoolock), highly endangered and only 'ape' species found in India dwells here.
- **Birds** - White winged Wood Ducks, a rare and endangered species, the great Indian hornbills, jungle fowls and pheasants.

Other Important Topics

Smart Compost Monitoring Solution

- It is a prototype for an intelligent IoT system that remotely monitors and manages compost which can be used as fertilizer.
- **Developed by** – International Institute of Information Technology – Bangalore (IIITB).
- **Working** – It includes a sensor hub associated with each bin to monitor the compost's pH, temperature, humidity, and CO_2 levels.
- It generates alerts using a mobile phone.

Ipsea malabarica

- It is also known as the Malabar daffodil orchid.
- It is a species of ground orchids *endemic to the high-altitude hills of the southern Western Ghats* in India.

Bhairavapalem wetland

- It is a mudflat in the *Godavari River* in East Godavari, ***Andhra Pradesh***, India.
- The wetland is a habitat for many bird species, including the endangered great knot and the *vulnerable Indian skimmer.*

Paradendryphiella salina

- It is a *marine fungus* that is commonly found growing on seaweed in the intertidal zone, with its closest non-marine relatives living on land plants.

Intergovernmental Negotiating Committee (INC5)

- **Aim -** To finalise the draft of a legally binding treaty on plastic pollution, addressing the issue comprehensively for the 1st time.
- **Mandate -** Encompassing the full lifecycle of plastics including product design and environmentally sound waste management.
- **Location -** It was at Busan, South Korea.

Jal Shakti Abhiyan (JSA)

- **Launched** – In 2019.
- A *nationwide campaign* focusing on saving and conserving rainwater.
- **Tagline -** *Catch the Rain*.
- **2024 Theme** - Nari Shakti se Jal Shakti.

AMRUT 2.0

- **AMRUT** – Atal Mission for Rejuvenation and Urban Transformation.

- **Launched in** – 2021 for 5 years (2021-22 to 2025-26).
- **Aim** – To provide *universal coverage of water supply* through *functional taps to all households* in all the statutory towns.
- **Supports** – Rainwater harvesting via storm-water drains and promotes groundwater recharge through 'Aquifer Management Plans.

Master Plan for Artificial Recharge to Groundwater

- **Developed in – 2020.**
- **Developed by – *Central Ground Water Board*.**
- **Plan – 1.42 crore rainwater harvesting and recharge structures to harness 185 BCM of rainfall.**

Pradhan Mantri Krishi Sinchai Yojana (PMKSY)

- **Launched in** – 2015.
- **Aim** – To expand irrigation coverage and improve water use efficiency.
- **Motto –** Har Khet Ko Pani, which means Repair, Renovation and Restoration (RRR) of Water Bodies.
- **Components** – Accelerated Irrigation Benefit Programme, Watershed Development and Per Drop - More Crop (Micro Irrigation).

Bureau of Water Use Efficiency (BWUE)

- **Setup under** – National Water Mission, 2022.
- **Act as a facilitator** – For promotion of improving water use efficiency across various sectors namely irrigation, drinking water supply, power generation, industries, etc. in the country.

Mission Amrit Sarovar (2022)

- **Launched in –** 2022.
- **Objectives** – To conserve water for the future.
- To create or rejuvenate 75 Amrit Sarovars in every district for water harvesting and conservation.

National Water Awards

- **Launched in** – *2018*, by the Department of Water Resources.
- **Objectives** – To *raise public awareness* about the importance of water and motivate the adoption of best practices in water usage.
- To recognize and *encourage exceptional contributions* towards water conservation and management across India.

Ground Water Management and Regulation (GWMR)

- A Central Sector Scheme.
- Period – 2021-26.

Major Activities	
	Aquifer Mapping
	Interventions for Aquifer Rejuvenation and SpringshedMapping
	Construction of Piezometers
	Monitoring of ground water levels
	Monitoring of ground water quality
	Assessment of ground water resources
	Regulation and control of ground water extraction
	Outreach Activities

Atal Bhujal Yojana

- **Launched in** - 2019.
- **Targets**- *Water-stressed Gram Panchayats* in 80 districts across 7 states, focusing on groundwater management.

National Compilation on Dynamic Ground Water Resources of India

- **Launched in** – 2024.
- **Launched by** – *Central Ground Water Board* (CGWB) in collaboration with State Groundwater Departments.
- It provides a comprehensive *state-wise overview of Ground Water*, serving as a foundation for effective policies and management strategies.

Banded Royal butterfly (Rachana Jalindra Indra)

- **Sepahijala Wildlife Sanctuary** – It has been recently spotted at the Sepahijala Wildlife Sanctuary in *Tripura*'s Sepahijala district.
- It is a rare butterfly species in the State.
- **Protection** – It is legally protected under Schedule 2 of the Wildlife Act, 1972.

Turtle Guardians initiative

- It was announced on June 25 during the budget session of the *Tamil Nadu* State Assembly.
- **Aim** – To collect data on sea turtle nesting, and for wildlife enthusiasts to receive information on hatchling releases.
- **5 species of marine turtles in Tamil Nadu coastline** – Olive Ridley, Green, Leatherback, Hawksbill, and Loggerhead turtles.

Green Mahakumbh

- It brings together more than 1,000 environmental and water conservation workers from across the country.
- **Aim** – To make Prayagraj clean, healthy and disciplined.
- **Part of** – Gyan Mahakumbh - 2081 series.
- **Organized by** – Shiksha Sanskriti Utthan Nyas.
- **Chief Patron** – CM of Uttar Pradesh.
- **Activity** – A national-level discussion will focus on issues related to nature, the environment, water and cleanliness.
- The Swachhata Rath Yatra was launched in Prayagraj to promote cleanliness and raise public awareness,

drawing significant community participation.

Cleanliness Measures at Mahakumbh 2025

- **Under** – Namami Gange mission.
- Over 28,000 toilets
  - *Fiber Reinforced Plastic (FRP) toilets*.
  - *Prefabricated steel toilets with soak pits*
- 20,000 community urinals.
- **37.75 lakh liner bags** – For waste collection and disposal.

Bharat Cleantech Manufacturing Platform

- **Launched at** – Bharat Climate Forum 2025 in New Delhi.
- **Aim** – To enhance India's cleantech value chains in the solar, wind, hydrogen, and battery storage sectors.
- **Role** – It will provide an opportunity for the Indian firms to collaborate, to co-innovate and will help provide a platform for financing, to share ideas, technologies and resources.
- **Significance** – It will help India become an attractive business case and a global leader in the sustainability and cleantech sector.

Coringa Wildlife Sanctuary

- **Located in** – *Andhra Pradesh*
- Its mangroves, coastal trees, provide habitats for marine life and protect shorelines from erosion.
- It is *India's 3rd largest mangrove forest*.

India's Non-Fossil Fuel Capacity

- India targeted to achieve 500 gigawatts of non-fossil fuel-based energy capacity by 2030.
- India is emerging as a *global leader in clean energy*.
- **Solar Energy** – 24.5 gigawatts, is the dominant contributor to the India's renewable energy growth.
- It accounts for 47% of the total installed renewable energy.
- **Wind energy** – 3.4 gigawatts.

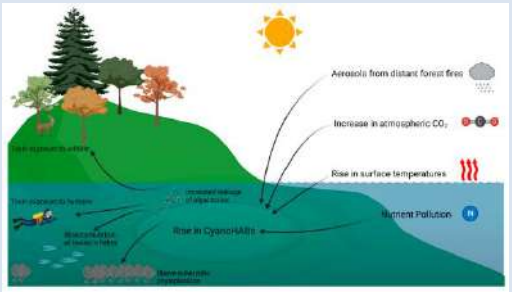
Cyanobacteria

- **Cyanobacteria** – It is a *photosynthetic microscopic bacteria* that live in all types of waterbodies.
- It is a *single-celled organisms* and produces toxins called *Cyanotoxins*.
- It is known as Cyanophyta, Cyanoprokaryota, Chloroxybacteria, and *Blue-Green Algae*.

Cyanobacterial Harmful Algal Blooms (CyanoHABs)

- **CyanoHABs** – *Increase in population* of cyanobacteria results in Harmful Algal Blooms (HABs).
- **Causes** – It turns the waterbody into *bright green or blue-green*.

- It forms a discoloration and mat on the bottom sediments of the water column.
- It causes *Dissolved Oxygen (DO)* swings.
- **Impact** – Plant and animal die-off
  - Taste and odor issues
  - Polluted water
  - Toxic to animals and people.



Wetland City Accreditation (WCA)

- Indore and Udaipur became the first 2 Indian cities to join the global list of wetland accredited cities.
- **Established in** – 2015.
- **Established by** – Ramsar Convention.
- **WCA** – It is a voluntary scheme provides an opportunity for cities that value their natural or human-made wetlands to gain international recognition and positive publicity for their efforts.
- **Validity** – 6 years, after it must be renewed.

Marshall Islands Marine Sanctuary

Marshall Islands declared its 1st national marine sanctuary.

- **Located in** – West-central Pacific Ocean between the Philippines, Hawaii and French Polynesia.
- **Coverage** – 2 northernmost uninhabited atolls called Bikar and Bokak.
- It protecting 2 of the most pristine ecosystems in the Pacific Ocean.
- **Species included** – Bristle-thighed curlew birds, Napoleon wrasse fish, and green sea turtle nesting colony and bumphead parrotfish.
- It is the *1st federal Marine Protected Area (MPA)* established by the Pacific Island nation.

National Geographic Pristine Seas

- **Launched in** – *2008*.
- **Concept** – It is an initiative that promotes the *creation of new marine protected areas* in collaboration with indigenous and local communities.
- It has helped establish *29 of the largest marine protected areas* in the world.
- **Area coverage** – 6.8 million square kilometers, more than twice the size of India.

Coal

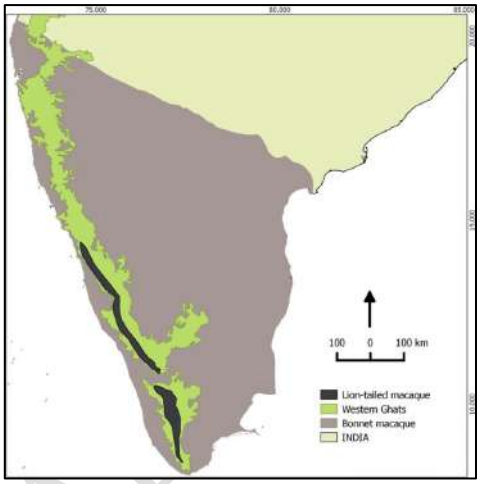
- **Coal** – It is a sedimentary deposit composed *predominantly of carbon* that is readily combustible.
- **Color** – Black or brownish-black.
- **Composition –** Inherent moisture consists of ***more than 50%*** by weight and more than *70% by volume of carbonaceous material*.
- **Formation** – From plant remains that have been compacted, hardened, chemically altered and metamorphosed by heat and pressure over geologic time.

SPECIES IN NEWS

8.10 Lion Tailed Macaque

Why in News?

Recently, the researchers from Kerala Forest Research Institute (KFRI) said that human interactions threaten endangered lion-tailed macaque.



- **Lion-Tailed Macaque** – It is one of the smaller macaque species and an *Old-World monkey*.
  - **Scientific name –** Maraca Soleus.
  - **Genus Maraca** – known for its adaptability to human-altered environments.
- **Habitat –** Evergreen, semi-evergreen rainforests & monsoon forests.
- **Distribution –** Found ***only in India*** in the Western Ghats.
- **Distribution in Western Ghats** – Anamalai Hills, Nelliyampathy, Nilambur Ghats, Sholayar, Gavi, Sabarimala, Vallimalai Hills, Valparai and Agumbe.
- **Morphology** – Its body is covered with black fur and tail is long, thin, and naked, with a tuft of black puffy hair at the tip.

- Both males and females have a *grayish lion-like mane of fur* that surrounds the face and the face itself is bare and black.
- **Behavior –** It is *arboreal* (pertaining to trees) and *diurnal*.
- It is a social animal, living in groups of 30-40 animals.
- It is *polygynous*, having more than 1 wife or female mate at a time.
- **Uniqueness** – They are the ***only macaques in which males use loud call*** to let entering troops know their territorial boundaries.
- **Threats** – With only ***about 4,200 individuals*** remaining, they face severe *risks due to food provisioning*, which leads to malnutrition, and disease.
- The long-term consequences of increased human interaction include
  - Increased exposure to *zoonotic diseases* and diet-related illnesses.
  - Behavioural changes like *reduced foraging* in natural habitats and increased reliance on human-provided food.
  - Rise in *injuries, roadkill incidents*, and stress-induced mortality.
- **Conservation status**
  - **IUCN Status** – Endangered (as of IUCN Redlist 2023)
  - **CITES** – Appendix I.
  - **Wildlife (Protection) Act, 1972** – Schedule I.

*Approximately 25% of the macaque population in habitat areas engage in interactions with humans where **hotspots** like Valparai, Nelliyampathy, and Sabarimala have seen rising interactions, especially due heightened tourist and pilgrim footfall.*

8.11 Indo-Burmese Pangolin

Why in News?

Recently, scientists from the Zoological Survey of India (ZSI), Kolkata have identified a new species of Indo-Burmese pangolin.

- **Pangolins** – They are the *only mammals wholly-covered in scales* and they use those scales to protect themselves from predators in the wild.
- **Indo-Burmese pangolin** – It is a distinct phylogenetic species of Asian pangolin, *diverged from the Chinese pangolin* around 3.4 million years ago, during the Pliocene Epoch.
    - **Scientific name** – Manis Indoburmanica.

> ***Phylogenetic species*** *is the smallest set of organisms that share an ancestor and can be distinguished from other such sets.*

- **Distinct species** – It has a genetic distance of 0.038 and a barcode gap of 3.8% which reinforced its status as a distinct species.
- It is influenced by geoclimatic changes in the Indo-Burma region.

> ***Genetic distance*** *is a measure of the genetic divergence between species or between populations within a species, whether the distance measures time from common ancestor or degree of differentiation.*

- **Distribution –** Nepal, Bhutan and Myanmar.
- **In India** – Arunachal Pradesh and Assam.
- It is home to 2 species,
    - **Indian Pangolin** – Found across the subcontinent.
    - **Chinese Pangolin** – Found across a larger area in south Asia.

> ***Mitochondrial genomes*** *include mitochondrial DNA are inherited to offspring from their mother.*

- Bihar, West Bengal and Assam have both species in their States.
- **Threats –** Pangolins are among the *most trafficked wild mammals globally* due to poaching and habitat degradation.
- **Conservation Status** –It hasn't yet been concluded.
- **World Pangolin Day** is observed every year on February 18.

8.12 Bharal

Why in News?

Recently, the researchers analyzed the population of 1,000 snow leopards due to large numbers of bharal in the Sanjiangyuan region of China.

- **Bharal –** It is called as the ***Blue Sheep*** and native to the high Himalayas.
- **Taxonomy:**
    - **Scientific name –** Pseudois Nayaur.
    - **Genus** – Pseudois, where it is the only member.
- **Distribution** – Montane regions in the Himalayas and China (in Gansu, Ningxia, Sichuan, Tibet and Inner Mongolia).
    - *India*, Bhutan, Myanmar, Nepal and Pakistan.

- **Habitat** – Open grassy slopes in high mountains and near cliffs.
- **Morphology** – Short, dense coat is slate grey in colour and bluish sheen, underparts and backs of legs are white, chest and fronts of legs are black.

> *Bharal accounted over 80% of snow leopards food intake. Its density ranks among the world's highest in Sanjiangyuan area of China's Qinghai province, part of the Tibetan Plateau.*

- Ears are small, nose is dark, horns are found in both sexes and are ridged on the upper surface.
- **Sexual dimorphism:**
    - **Males** – Horns are grown upwards, turn sideways and curve backwards.
    - **Females** – Horns are much shorter and straighter.
- **Behavior** – They are ***active throughout the day,*** alternating between feeding and resting on the grassy mountain slopes.
- They adjust up to the precipitous cliffs, where they once again freeze, melting into the rock face.

- **Threats:**
  - Poaching for meat.
  - Competition with livestock.
- **Conservation Status:**
  - **IUCN Status** – Least Concern (LC).
  - **Wildlife Protection Act 1972** – Schedule 1.

8.13 Culicoides

Why in News?

Recently, researchers from the Zoological Survey of India (ZSI) have identified 23 species of blood-sucking flies in the Andaman & Nicobar Islands.

> ***Haematophagous*** *means especially an insect or tick feeding on blood.*

- **Culicoides** – They are ***tiny insects*** similar in appearance to flies.
- They are *more closely related to mosquitoes* in their feeding habits.
- They are called Midges and are locally called Bhusi Files in Andaman and Nicobar.

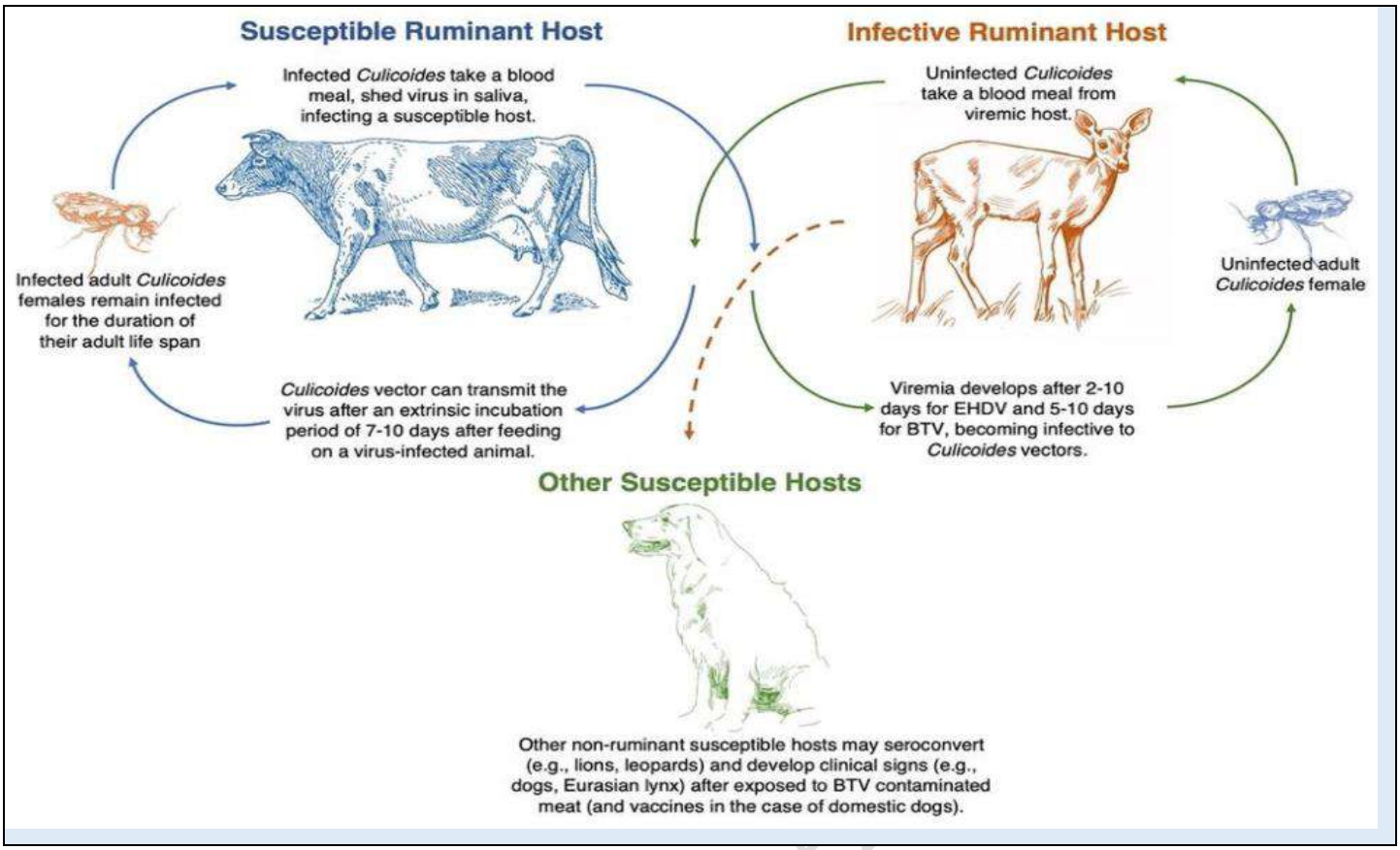
- **Taxonomy**
  - **Scientific name –** Culicoides.
  - **Order** – Diptera, the smallest haematophagous member.
- **Distribution** – Africa, North and South America and Europe.
  - **India** – Includes *93 valid species*, recognized as potential vectors of important pathogens of animal health.
  - 13 new species recorded for the 1st time in India, in the Andaman and Nicobar Islands.

> *A study conducted in 2022 and 2023, revealed that 17 of the 23 species identified are known to bite humans, although no human disease transmission has been reported.*

- **Feeds on** – The blood of *livestock* such as sheep, goats, cattle and wild animals like deer.
- **Transmitting agents** – 5 of the species are known to transmit the ***Bluetongue***
-
- ***(BT) disease.***

Bluetongue (BT)

- It is an infectious, non-contagious, vector-borne viral disease.
- **Symptoms** – Blue discolouration of the tongue, fever, facial swelling and excessive salivation.
- **Causes** – It can potentially lead to death in affected animals.
- It poses a significant threat to livestock farming and the agricultural economy.
- It also impacts humans.



8.14 Kashmir Chinars

Why in News?

J&K Forest Research Institute (FRI) of J&K Forest Department recently geo-tagged and equipped with QR-code of chinar trees in Kashmir for digital protection and to conserve the rich heritage.

- It is a large deciduous tree with a spreading crown and a long life.
- **Scientific Name -** Platanus orientalis.
- Chinar is also known as Oriental plane tree, maple tree and locally it is called as Boueen.
- **Habitat** - It is a distinctive feature of the Kashmir valley and is found all around it.

'Char Chinar' is an island on the Dal Lake in Srinagar, gets its name after the Chinar Tree.

- **Origin** - It is believed to have been introduced in Kashmir from Persia.
- **Height** - It can grow up to 30 meters in height and have a girth of 10 to 15 meters at ground level.
- It takes around 150 years for a Chinar to reach its full size.
- **Uniqueness -** One of the unique characteristics of this tree is that its leaves change colors.
- During the summer season, the chinar tree's leaves are deep green. But, as the autumn season sets in, the leaves change color to a beautiful blood-red, amber and yellow.
- Kashmir is home to world's oldest Chinar, which is 647 years old and located in central Kashmir's Budgam district.
- **Uses**
    - Ornamentation,
    - Leaves, and bark are used as traditional medicine,
    - Used for creating wood products,
    - Twigs and roots can be used as fabric dye.

8.15 Spotted Hyena

Why in News?

A recent study discovered that the hyena (Crocuta crocuta), one of Africa's most abundant carnivores, appeared in southern Egypt after it became extinct in Egypt 5,000 years ago.

- It is a Non-arboreal, Nocturnal, Highly social hyena species found abundant in ***sub-Saharan Africa.***
- It is also known as the laughing hyena.
- **Scientific Name -** Crocutta crocutta.
- **Family –** Hyaenidae (largest extant member of the Hyaenidae).
- **Weight -** 40-86 kg - females often weigh more than males.
- **Habitat** - Semi-desert, savanna and open woodland, dense, dry woodland, and montane regions.
- **Range** - Sub-Saharan Africa, though historically across Africa and Eurasia.
- **Distinction** - It is physically distinguished from other species by its vaguely bear-like build, rounded ears, less prominent mane, spotted pelt, more dual-purposed dentition, fewer nipples, and pseudo-penis.
- It is the ***only placental mammalian species*** where females have a pseudo-penis and lack an external vaginal opening.

- **Diet –** Carnivorous.
- **Conservation status**
  - **IUCN Status** - Least Concern.
  - **CITES Appendix** - Not listed.
- **Population in Wild -** 27,000-47,000 individuals; most abundant within the ***Serengeti ecosystem and Kruger National Park.***
- **Threats -** Habitat loss and poaching.

8.16 White-naped Tit

Why in News?

A group of bird enthusiasts traced the rare white-naped tit for the first time at Kadakola village in the Kappatagudda hills, North Karnataka.

- It is a ***passerine bird*** (any bird of the order Passeriformes) in the tit family Paridae.
- **Scientific Name -** Machlolophus nuchalis.

- **Size** - White-naped tit is a 12-13 cm medium-sized ***shy*** bird.
- It is the only pied (black-and-white) tit in India.
- **Appearance –** It has the wing-coverts, crown, sides of head, chin, throat, a ventral band running down the breast and belly to the vent black.
- The cheeks below the eye, the ear-coverts and a patch on the nape are white.
- The wing has white on the outer primaries and the base of the secondaries. The last tertiaries are completely white.
- **Nesting** - It prefers nesting and roosting only in cavities made by coppersmith barbets and woodpeckers on old trees of Indian frankincense Toothbrush Tree, Gum Arabica, and Indian Jujube.
- **Distribution -** It is very patchily distributed and endemic to India.
  - In India, it is found in only some parts of Rajasthan, Gujarat, the Eastern Ghats of Southern Andhra Pradesh, Northern Tamil Nadu, Haryana, and Southern Karnataka.
  - In South Karnataka, it's documented only in the ***Cauvery Wildlife Sanctuary.***
- **Habitat** – Found in dry thorny scrub forests in two disjunct populations, in western India and southern India.

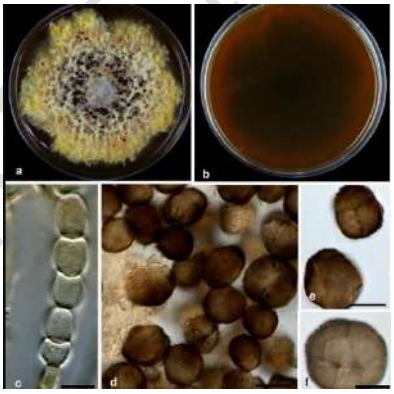
SHANKAR IAS ACADEMY

- This species is and has been vulnerable to extinction, especially because of the
- **Diet** - It mainly feeds on insects and nectar from flowers of caper berries (Chippuri/Kariuppi).
- **Vocal -** Quite vocal, commonly gives a 2- to 5-noted high-pitched "psi-psi-psi" ending in a harsh churrr.
- **Conservation status**
    - **IUCN** – Vulnerable.
- **Threats -** scarcity of suitable habitats, particularly nest cavities made by woodpeckers.

8.17 Epicoccum Indicum

Why in News?

A new species of phytopathogenic fungi, epicoccum indicum was recently discovered by researchers at Banaras Hindu University.



- It is a ***new species of phytopathogenic fungi*** associated with an emerging leaf spot disease in Chrysopogon zizanioides (vetiver).
- The species was identified based on morpho-cultural characteristics and multigene molecular phylogenetic analyses.
- It forms a distinct clade, separate from other related species, which justifies its classification as a new species.
- The species name refers to India, where it was discovered.

Phytopathogenic fungi

- It can cause diseases in plants, leading to significant economic losses in agriculture and horticulture
- It is contributed to ***70-80%*** of plant diseases and infect parts of the plants such as roots, stems, leaves, fruits and flowers.
- Most of these fungi belongs to Ascomycetes and the Basidiomycetes.
- They possess a wide range of enzymes destroying the carbohydrate polymers (constitute the building materials of the cell walls).
- Some fungi ***kill their hosts*** and feed on dead material (necrotrophs), while others colonize the living tissue (biotrophs).

Leaf spot disease

- It is a plant disease that causes circular or elongated spots on leaves, stems, and sheaths.
- These spots can be brown, black, tan, or reddish in color, and can vary in size.
- Leaf spot disease can be caused by fungi, bacteria, nematodes, or other organisms.

8.18 Indian squid

Why in News?

The ICAR-Central Marine Fisheries Research Institute (CMFRI) recently said that it decoded the gene expression pattern of Indian squid having major implications from neuroscience to environmental science.

- **Scientific Name -** Uroteuthis duvaucelii.
- It is also known as the Indian calamari.
- **Group** - It is a cephalopod species, any member of the molluscan class Cephalopoda.
    - This group includes highly advanced species such as squids, octopuses, cuttlefish, and nautiluses.
- **Family –** Loliginidae, typically called inshore or neritic squids.

SHANKAR IAS ACADEMY

- **Appearance -** Indian squid has a distinctive coloration, with a light pinkish-gray body and 2 large fins on either side. They have 8 arms and 2 longer tentacles that they use to capture prey.
- **Behavior -** Generally, squids are extensively known for their rapid growth rate, limited lifespan, and complex population structures
- They are fast swimmers and are capable of propelling themselves through the water using a jet propulsion system.
- This allows them to reach speeds of ***up to 40 km/h*** when escaping from predators or chasing prey.
- Squids tend to prefer areas with high levels of dissolved oxygen, as this is crucial for their respiration.
- **Distribution -** It is distributed in the Indo-Pacific region, occurring in depths between 30 and 170 meters.
- Along the coast of India, squids are commonly found in the waters off the coasts of Tamil Nadu, Kerala, and Goa.
- **Diet** - This species is an ***active carnivore*** that feeds mainly on crustaceans and small fishes and often exhibits cannibalistic behavior.
- **Conservation Status**
  - **IUCN** - Least Concern.
- **Uses -** Food resource, utilized as fertilizer supplemental food source for highend and expensive cultured animals.
- **Other Species - Bigfin reef squid** – IUCN Status - "Data Deficient".

8.19 Popa Langur

Why in News?

Recently, the scientists have discovered new monkey species Popa Langur, is on the verge of extinction.

- **Popa Langur –** It is a newly-discovered species, occurs in ***central Myanmar*** which is named after the sacred Mount Popa.
- **Discovered in** – *2020*.
- **Taxonomy**
  - **Scientific Name** – Trachypithecus popa.
  - **Genus** – Trachypithecus of Old-World primates.
- It was often referred as ***Leaf-Monkeys***.
- **Habitat** – Found in the evergreen and deciduous forests, bamboo forests and plantations.
- **Distribution** – High evergreen forests of Myanmar.
- **Morphology –** It has soft fluffy gray fur, pointed cap of fur on their head, like most langurs, small heads and large eyes made bigger in appearance by thick white eye rings.
- It has small, elongated nostrils and a wide mouth covered in white fur, chest and belly are pale gray-white in color.
- **Behavior –** It is an *arboreal* (spending most of their time in trees) and *diurnal* (active during the day).
- It is capable of traveling long distances and has home ranges large as 256 acres.
- It is vocal primates and range calls to communicate with each other.
- **Diet –** It is a *folivores (leaf eaters)*, which feed on leaves, fruits, green shoots and petioles.
- Researchers recently estimated that only 200 to 260 individuals remain now.
- **Threats** – Hunting for meat
  - Illegal pet trade
  - Agricultural encroachment

The largest populations of Popa Langur live in Popa Mountain Park and Panlaung-Pyadalin Cave Wildlife Sanctuary, Myanmar.

SHANKAR IAS ACADEMY

- Water and soil pollution
- Cattle ranching.

- **Conservation Status**
  - **IUCN** – Critically Endangered.
  - **CITES** – Appendix II.

Other Important Topics

Goby Fish Species

- **Discovered by** – *Zoological Survey of India (ZSI),* about 2 unrecorded goby fish species.
- **Discovered at** – Coringa Wildlife Sanctuary, hosts 53 of the 95 goby species recorded in India.
- **2 species** – Hemigobius hoevenii and Mugilogobius tigrinus.

9. SCIENCE & TECHNOLOGY

PHYSICAL SCIENCE

9.1 Cubic Kilometre Neutrino Telescope (KM3NeT)

Why in News?

Recently, the scientists have deployed 2 telescopes under the Mediterranean Sea to detect high-energy neutrinos.

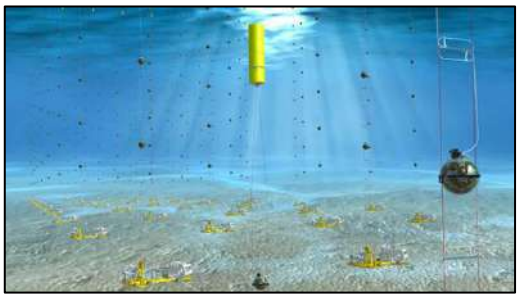
- It is an ***underwater Neutrino telescope***.
- **Aim** – To *study high-energy neutrinos* also known as ghost particles that could reveal secrets of the cosmos.
- **Need for underwater Neutrino telescope** – While both frozen ice and deep-sea waters are used for detecting neutrinos, *underwater neutrino telescopes could be more efficient* than IceCube.

> ***Neutrinos*** *are weakly interacting subatomic particles that can travel astronomical distances undisturbed. They are the 2nd most abundant subatomic particles after photons.*

- That is because ***water scatters light less***, which gives a more accurate idea about where the detected neutrinos came from.
- **Features** – It consists of *2 telescopes* made up of glass baubles arranged on vertical cables.
- Each strand dangles in the water like a pearl necklace that's up to 700 meters long.

> *Neutrino detectors needs to be in dark because it looks for flashes of* ***Cherenkov radiation****, a light that neutrinos produce when they interact with a water or ice molecule. These flashes trace the path of that neutrino, giving details of its source, the amount of energy it contains, and its origins.*

- Each bauble, a pressure-resistant sphere 44 centimeters wide, contains *31 photomultiplier tubes* that sense light generated when neutrinos crash into the seawater.
- **Deployment** – Detectors are *deployed in 1 month-long campaign every year* and at the end of 2024, the telescopes boasted 57 strands.
  - Eventually, 100's of such cables will sway in the currents, a few kilometers below the surface off the *coasts of Sicily and the South of France*.



- **Sicilian telescope** – Study high-energy *neutrinos from space*.
- **French telescope** – Study *neutrinos from the atmosphere* to understand how they oscillate, or change from 1 type of neutrino to another.
- **Disadvantage of underwater neutrino telescope** – Water absorbs light more and as a result, there will be less light to examine.

9.2 Dozer Push Mining Trial

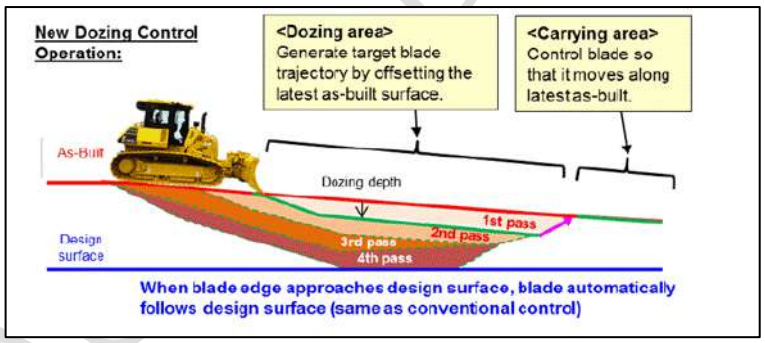
Why in News?

Recently, India has successfully conducted the 1st trial blast of the Dozer Push Mining Method.

- **Dozer Push Mining** – It is a cutting-edge *technological solution that integrates advanced digital technologies* to revolutionise coal extraction processes.
- It is a viable *alternative to the conventional truck-shovel mining technique* or shovel-dumper and *dragline methods*.
- **Trial in** – Parsa East and Kete Basen (PEKB) Coal Mine in Chhattisgarh by Adani Natural Resources.

> ***Truck-Shovel (TS) systems*** *are the most common mining system used to remove the upper and thinner overburdens found within a deposit.* ***Dragline methods*** *remove the much deeper overburdens.*

- **Developed by** – Dhanbad based CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR).
- **Objective** – To ensure the vibration and fly rock which are controlled within safe limits.
- **Key technical innovation** - *Automated drilling process* with unmanned operations.
- Precise *cast/throw blasting techniques* for optimal material displacement.
- *Automated dozer* for efficient material movement.
- Integration of advanced digital technology for operational oversight.
- **Trial** – It involved drilling of 108 holes using automated drill machine, followed bycast/throw blasting using 60 tons of bulk emulsion explosives.
- The blasted material will be pushed in decoaled area using specially designed, large-sized automated dozer machine.



- **Benefits** – *Faster coal recovery rates*, accelerating project timelines.
- *Reduced weather-related production delays*, ensuring consistent output.
- Enhanced dragline machine utilisation, maximising equipment efficiency.
- *7-10% reduction in operational costs* and lower unit production costs, improving competitiveness in the market.

9.3 Ransomware Trends in 2024

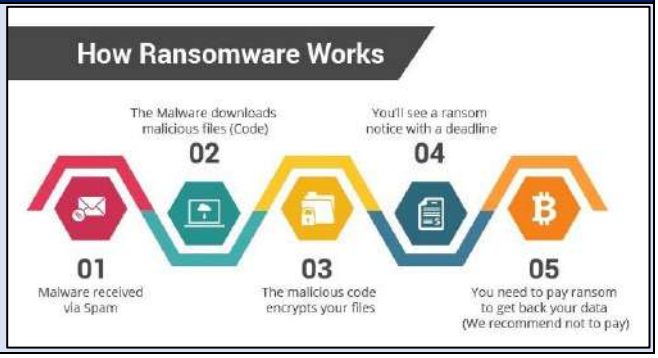
Why in News?

Recently, the CyberPeace released a report of Ransomware Trends 2024: Insights for Global Cybersecurity Readiness.

- CyberPeace used advanced *Open-Source Intelligence Techniques (OSINT)*, for continuous monitoring of Ransomware Group activities.

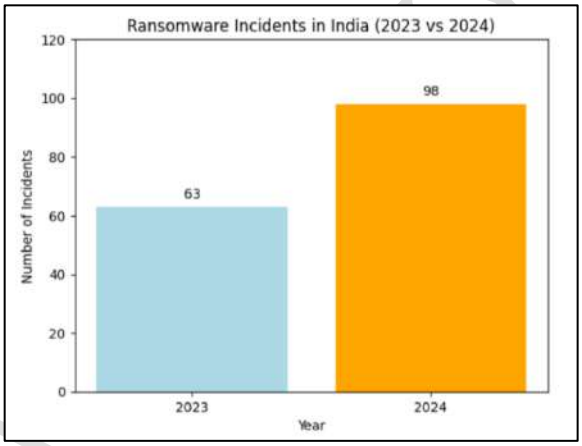
Ransomware

- It is a type of malware that *holds data and devices hostage* until a ransom is paid.
- **Encrypting ransomware** – Holds the victim's data hostage by encrypting it.
- **Non-encrypting ransomware** – Locks the victim's entire device, usually by blocking access to the operating system.



- **Threat** – Ransomware groups orchestrated 5,233 claims across 153 countries using these underground resources.
- **Most targeted nations** – United States, followed by Canada, the UK, Germany, and others.
- It revealed that *killsec was the most frequent threat*, followed by lockbit3 as the second most prominent threat.
- **Vulnerable targets** – It poses significant risks to industries, governments, and individuals alike.
- **In India** – It witnessed a *55% rise in ransomware attacks with 98 recorded cases.*
- The *industrial sector was frequently targeted*, accounting for 75% of the total incidents.
- The *government sector experienced the least impact*, with only 3% of the incidents, indicating minimal targeting compared to the other sectors.
- **Proactive Measures** – Implement Data Backup and Recovery Plans
    - Enhance Employee Awareness and Training
    - Adopt Multi-Factor Authentication (MFA)
    - Utilize Advanced Threat Detection Tools
    - Conduct Regular Vulnerability Assessments.

Impacted Sectors in India	Incidents
Industrial sector	75%
Health Care center	12%
Finance sector	10%
Government sector	3%



Other Important Topics

Willow

- It is a *quantum processor.*
- **Launched by** – *Google*.
- **Features** – The coherence time of data qubits on Willow is about 100 microseconds, which is more than the coherence time of the physical qubits.
- **Advantages** – It has significantly better error correction and is significantly faster than other quantum computers.

Chemicals in Flame Retarding Plastics

- **Decabromodiphenyl ether (decaBDE)** - It is used in many products, including electronics, furniture, and textiles.
- It is known to be hazardous and persistent in the environment.
- **2,4,6-Tribromophenol** - It is in black plastic and it is associated with *thyroid disruption in humans* and mice and has been detected in serum, breast milk, and placenta.

IceCube Neutrino Observatory

- It can detect high-energy neutrinos from deep space but is under the frozen ice in the Antarctic rather than being in the water.
- IceCube, which has been operational since 2011 and was the 1st telescope to detect high-energy neutrinos, has been able to only spot a handful of these messengers.

K2-18 b

NASA's James Webb Space Telescope has observed that K2-18 b may have conditions suitable for liquid water and possibly life.

- It is an exoplanet found in a habitable zone.
- **Discovered by** - Kepler Space Telescope in 2009
- **Features** – It is about 124 light-years away from Earth, with a radius 2. 6 times that of Earth and a mass 8. 6 times greater.

MeerKAT radio telescope

- It is a 64-dish array.
- **Located in** – Karoo semi-desert in South Africa.
- **Built and operated by** – South African Radio Astronomy Observatory (SARAO).
- **Precursor to** – The Square Kilometre Array (SKA), which is expected to be the world's most powerful radio telescope when it's fully operational.
- **Significance** – It is the largest radio telescope in the Southern Hemisphere

Nafithromycin

- It is *India's 1st Indigenous Antibiotic* through public-private collaboration.
- **Launched in** – 2024.
- **Aim** – To treat both typical and atypical drug-resistant bacteria.
- **Under** – Biotechnology Industry Research Assistance Council (BIRAC) Biotech Industry Program.
- **Targets** - Community-Acquired Bacterial Pneumonia (CABP) caused by drug-resistant bacteria.
- **Advantages** – *10 times more effective than azithromycin* and offers a 3-day treatment regimen.

Successful Gene Therapy Trial for Haemophilia

- **Conducted at** – Christian Medical college, Vellore.
- **Support of** – Department of Biotechnology.
- **Haemophilia** – A rare *inherited blood disorder* in which the blood doesn't clot in the typical way because it doesn't have enough blood-clotting proteins (clotting factors).

BIO-E3 Policy

- **Bio-E3** – Biotechnology for Economy, Employment, and Environment
- **Aim** – To shape the country's economy, employment landscape, and environmental sustainability in the years to come.

Nano-formulation of Melatonin for Parkinson's disease

- **Melatonin** - A neurohormone secreted *from the pineal gland*, an endocrine gland present in the brain.
- It *regulates the sleep-wake cycle* and is used to treat insomnia could be a potential inducer of mitophagy to mitigate PD.
- **Parkinson's disease (PD)** - A neurological disorders caused by the *death of dopamine-secreting neurons* in the brain due to aggregation of synuclein protein inside it.

Centre for Development of Telematics (C-DOT)

- It is the premier Telecom R&D centre of the Department of Telecommunications (DoT).
- **Role in 6G development** – It has signed an agreement with the IIT Delhi for the development of "Building Blocks for THz Communication Front Ends" for 6G.

- It is signed under the *Telecom Technology Development Fund (TTDF).*
- **Aim** – To develop basic devices and components for THz systems envisaged for 6G communications, as well as other THz systems such as military communications and material characterization.

SPACE

9.4 Quandrantid Meteor Shower

Why in News?

The world is all set to witness the 1st Quadrantid meteor shower of the year 2025.

Meteor shower

- It is a celestial event in which a *number of meteors* are observed to radiate, or originate, from one point in the night sky called Radiant.
- **Caused by** – *Streams of cosmic debris called meteoroids* entering Earth's atmosphere at extremely high speeds on parallel trajectories.

- **Name Quadrantids** – It comes from the obsolete *constellation Quadrans Muralis*, which was named in 1975 by French astronomer JJ Lalande.
- **Origin** – It possibly emerged from *asteroid 2003 EH1*.
- **Observation** – It was *1st seen in 1825* by Belgian astronomer Adolphe Quetelet.
- **Fireball meteors** – These meteors usually lack persistent trains but often *produce bright fireballs*.
- They are known for their larger explosions of light and color with *magnitudes brighter than -3*.
- It persists longer than an average meteor streak due to the fireballs which originate from larger particles of material.
- **Speed** – They enter the Earth's atmosphere at high speed, typically *around 40km per second*.
- **Visibility -** In its peak activity, observers can spot ***60 to 120 meteors per hour*** and the visibility depends mainly on location and timing.
- **Quadrantid Meteor Shower in 2025** favour the western regions of North America during pre-dawn hours. They are likely to shine bright as Earth's forward-facing side hits them at high speed.

Quadrans Muralis *is located between the constellations of Bootes and Draco (near the end of the handle of the "Big Dipper").*

Asteroid 2003 EH1 *is believed to be a fragment of an extinct comet that broke down in 1490-91, which takes 5.52 years to orbit the Sun once.*

Asteroid	A relatively small, inactive, rocky body *orbiting the Sun*.
Comet	A relatively small, at times active, object whose ices can vaporize in sunlight forming an atmosphere (coma) of dust and gas and, sometimes, a *tail of dust and/or gas*.
Meteoroid	A small particle *from a comet or asteroid* orbiting the Sun.
Meteor	The light phenomena which results when a meteoroid enters the Earth's atmosphere and vaporizes; *a shooting star*.
Meteorite	A meteoroid that survives its passage through the Earth's atmosphere and *lands upon the Earth's surface*.

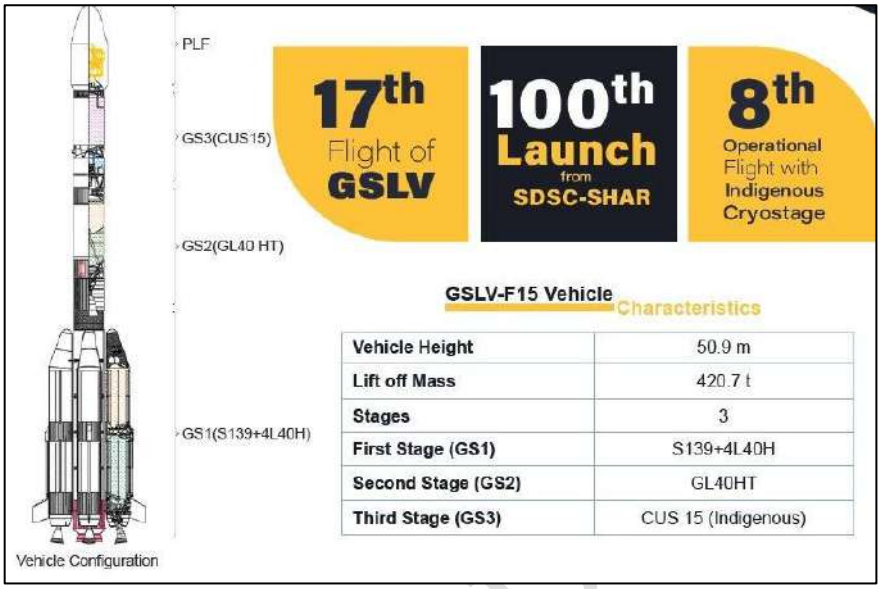
9.5 GSLV-F15 NVS-02 Mission

Why in News?

GSLV-F15 NVS-02 mission is the 100th launch from the Satish Dhawan Space Centre in Sriharikota, scheduled for January 29.

- **GSLV-F15 NVS-02** – Geosynchronous Satellite Launch Vehicle (GSLV)- F15/ Navigation with Indian Constellation-2 Satellite (NVS-2).
- **GSLV-F15 – 17th flight** of India's Geosynchronous Satellite Launch Vehicle (GSLV).
    - **11th flight with** – Indigenous Cryo stage.

- **8th operational flight with** – Indigenous Cryogenic stage.



- **Payload** – Its fairing is a metallic version with a diameter of 3.4 meters.
- It will place NVS-02 satellite into a ***Geosynchronous Transfer Orbit (GTO)***.
- **NVS-02 satellite** – It is the *2nd satellite* in the NVS series.
- **Navigation with Indian Constellation (NavIC)** – *NVS-02 satellite is part of NavIC*.
- It is India's independent regional navigation satellite system designed to provide accurate Position, Velocity and Timing (PVT) service to users in India.
- It *extends to region of about 1500 km beyond Indian land mass*.
- **U.R. Satellite Centre (URSC)** – *NVS-02* was designed, developed and integrated at the *U.R. Satellite Centre (URSC)* with the support of other satellite-based work centres.
- **Navigation Payloads** – It operates in L1, L5, and S bands and employs ***Tri-band antenna***.
- **Rubidium Atomic Frequency Standard (RAFS)** – Is the main component of the navigation payload.

> ***Code-Division Multiple Access (CDMA)*** *is a digital cellular technology that uses spread spectrum techniques to allow multiple users to share the same frequency band simultaneously.*

- RAFS is an ***atomic clock*** which acts as a stable frequency reference for the navigation payload.
- **Ranging Payloads** – It consists of ***C-band (CxC) transponder*** used for 2-way Code Division Multiple Access (CDMA) ranging to facilitate precise orbit determination.
- **Lift off mass** – 2,250 kg.
- **Power handling capability** – Approximately 3 kW.
- **Usage** – A combination of indigenous and procured atomic clocks for precise time estimation.

9.6 WASP-127b

Why in News?

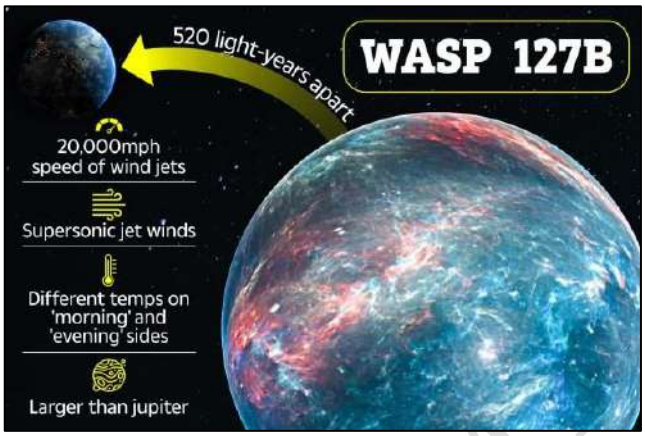
Recently, the astronomers have detected winds howling on large gaseous planet, WASP-127b.

- **Discovered in** – *2016*.
- **Located in** – Milky Way galaxy approximately 520 lightyears from the earth in a tight orbit around a star.
- **WASP-127b** – It is a ***gas giant exoplanet***, which means that it has no rocky or solid surface beneath its atmospheric layers.
- Instead, below the observed atmosphere lies gas that becomes denser and more pressurized the deeper one goes into the planet.
- **Type** – *Hot Jupiter*, that orbits very close to its host star.
- **Diameter** – About 30% larger than Jupiter.

> *An **Exoplanet** is any planet beyond our solar system. Most of them orbit other stars, but some free-floating exoplanets, called Rogue Planets.*

- **Mass** – Only 16% (0.1647) of Jupiters, making it one of the puffiest planets ever observed.
- **Orbital Period** – It takes *4.2 days* to complete 1 orbit of its star.
- **Position** – One side of WASP-127b faces its star, the day side.

- The other side always faces away, the night side.
- **Temperature** – 2,060 degrees Fahrenheit, its polar regions less hot than the rest.
- **Composition** – Mainly of hydrogen and helium.



Research Findings

- **Speed** – The wind circling at its equator are the fastest of their kind on any known planet.
- Its atmosphere also contains traces of more complex molecules such as ***carbon monoxide and water***.
- The primary source of energy for these winds is the ***intense irradiation*** from the host star.
- Higher atmospheric wind speeds have been detected on 2 other exoplanets, in winds from their day side to night side.

Other Important Topics

International Solar Conference (ISC)

- **Conference on** – Sun, Space Weather and Solar-Stellar Connections.
- **Organised by** – Indian Institute of Astrophysics (IIA).
- **Purposes** – To commemorate the 125th anniversary of the *Kodaikanal Solar Observatory (KSO)*.
- **Themes** – Solar magnetism over long time scales.
  - Solar magnetism in high resolution.
  - Energetic phenomena.
  - Solar-stellar connection.
  - Heliosphere.
  - Space weather.

Kodaikanal Solar Observatory (KSO)

- **Established in** – 1899.
- **Location** – Palani hills, Tamil Nadu.
- **Operated by** – Indian Institute of Astrophysics.
- **Observation** – It houses a digital repository of *1.2 lakh digitized solar images and 1000s of other images of the Sun* recorded every day.
- It made understanding of sunspots, solar flares, coronal mass ejections and other solar phenomena.

Artificial Sun

- *Chinese scientists achieved a world record with artificial Sun.*
- **Artificial Sun** – It is a *mega nuclear fusion device*, which generates energy through a fusion process similar to that of the sun.
- **Aim** - To create *clean and sustainable energy* through a fusion process for global energy supply.
- **Conducted at** – Experimental Advanced Superconducting Tokamak (EAST).
- **Achievement** – Maintained plasma temperatures exceeding *100 million degrees Celsius for nearly 18 minutes.*

DEFENCE

9.7 Nag Mk 2

Field Evaluation Trials of Nag Mk 2 Anti-Tank Missile, were successfully conducted recently.

- **Nag Mk 2** – It is an indigenously-developed third-generation Anti-Tank Fire-and-Forget Guided Missile.
- **Characteristics** – It is an all-weather, fire-and-forget, lock-on after launch, anti-tank guided missile (ATGM).
- **Range** - While the exact range remains classified, the Nag Mk-2 is estimated to have a range of seven to 10 kilometres.
- **HEAT warhead** - The missile also boasts a tandem high-explosive anti tank (HEAT) warhead for increased destructive power .
- It also has top-attack capability to strike the most vulnerable part of armoured targets.

Its predecessor the Nag Mark 1, which had a 4-kilometre range.

- **Launch vehicle** - Nag Mk-2 missile is launched from the NAMICA, an armoured vehicle based on the Indian-made BMP-2 Sarath.
- **Sarath** – It is based off a Russian-origin BMP-II based system with amphibious capability.
- **NAMICA** – It provides a robust and mobile platform for the Nag missile system, allowing it to be deployed quickly and effectively across various terrains.
- **Effectiveness** – It is effective against modern armoured vehicles, including those equipped with Explosive Reactor Armour.

Other Important Topics

Z Plus security

Former Prime Minister Manmohan Singh's wife Gursharan Kaur will continue to be guarded by the Central Reserve Police Force (CRPF) under Z-plus category.

- It is the *highest level of protection* provided to some of the most powerful yet most vulnerable citizens.
- **Protection force** – It includes a *55-person entourage*, of which, usually, 10 personnel are NSG commandos, while the rest may be the civil police.
- **SPG coverage** – These people sometimes also get an additional Special Protection Group covering which usually, the Prime Minister and their family members are provided.

Cyber Volunteer Framework

- **Initiative by** - Indian Cyber Crime Coordination Centre (I4C).
- **Objective** – To enable *citizens to enrol as cyber volunteers* for reporting unlawful content, dissemination of cyber hygiene, and as cyber expert to aid law enforcement.

Tehrik-e Taliban Pakistan (TTP)

- It is also known as the *Pakistan Taliban*.
- **Alliance of** – Formerly disparate militant groups that came together in 2007 following Pakistan military operations against Al-Qaida-related militants in the Federally Administered Tribal Areas.
- **Formation** – Under the leadership of Baitullah Mehsud.
- **Regions** – It is rooted along the *Afghanistan/Pakistan border*.

2025 as Year of Defence Reforms

- **Aim** – To revamp its armed forces.
- **Key focus** – On implementing integrated theatre commands to improve collaboration among the Army, Navy, and Air Force, making the military more advanced and ready for combat.

Integrated Theatre Commands

- It seeks to combine the strengths of all three services within a unified operational framework.
- Each theatre command will include units from the Army, Navy, and Air Force to tackle security challenges in specific regions.

Advanced Light Helicopter (ALH)-DHRUV

- ALH-DHRUV is an *indigenously developed* utility aircraft by Hindustan Aeronautics Limited (HAL) with a *twin-engine*.
- It has a multi-role, multi-mission dimension to it.

BHARATPOL portal

- **Developed by** – *Central Bureau of Investigation (CBI)*.
- This portal will streamline all requests for international assistance through INTERPOL, including the issuance of Red Notices and other color-coded INTERPOL notices.

UN Committee of Experts on Big Data and Data Science (UN-CEBD)

- **Aim** - To further investigate the benefits and challenges of Big Data, including the potential *for monitoring and reporting* on the sustainable development goals (SDGs).
- **India** - It has *joined* the prestigious committee recently.
- It is a step toward *revolutionizing statistical production* and dissemination, ultimately contributing to a more resilient and data-informed world.
- It helps in aligning India's domestic advancements in big data & data science with international goals.

100 years of Srinagar Meteorology Centre

- **Functions under** – Ministry of Earth Sciences.
- **Recognition** – It is recognized as a *Centennial Centre* by the World Meteorological Organization (WMO).
- Recently, Government announced about the establishment of a Regional Meteorological Centre in Jammu.

77th Army Day

- **2025 Army Day parade in** – Pune.
- **2025 theme** - 'Samarth Bharat, Saksham Sena' (Capable India, Empowered Army).
- **Commemorates** – In recognition of Lieutenant General *Kodandera M. Cariappa's taking over as the 1st Commander-in-Chief* of the Indian Army from General Francis Roy Bucher, the last British Commander-in-Chief of India in 1949.
- It epitomises determination, professionalism and dedication.
- **Army** – Safeguarding our borders and providing humanitarian help during natural disasters**.**

INS Surat

India commissioned 3 frontline naval combatants on Army Day.

- It is the *4th and final ship* of the *P15B Guided Missile Destroyer* Project.
- **Make in India** – It has an *indigenous content of 75%.*
- **Features** – State-of-the-art weapon-sensor packages and advanced network-centric capabilities.
- It ranks among the largest and most sophisticated destroyers in the world.

INS Nilgiri

- It is the 1st ship of the *P17A Stealth Frigate Project*.
- **Designed by** - Indian Navy's *Warship Design Bureau.*
- **Advanced features** – Enhanced survivability, seakeeping, and stealth, reflecting the next generation of indigenous frigates.
- It is dedicated to the maritime prowess of the Chola dynasty.

INS Vaghsheer

- It is the *6th and final submarine* of the *P75 Scorpene Project*, 1st submarine was Kalvari.
- It represents India's growing expertise in submarine construction.
- **Constructed by** – India, collaboration with the Naval Group of France.

Hypersonic Missiles

- **Speed** – It travel *faster than Mach 5* (over 5,400 km/hr)
- **Capabilities** – Capable of bypass existing Air Defense Systems & can delivering rapid and impactful strikes.

Scramjet Engine Technology

- Advanced Computational Fluid Dynamics (CFD) simulation tools were used for their evaluation & performance prediction.
- **Technology** – An air breathing engines that *enable combustion at supersonic speeds.*
- **Mechanism** – Flame stabilization technique maintains continuous flame at high air speeds.
- **Development in India** – *Defense Research & Development Laboratory* (DRDL) has taken the initiative in developing a long-duration Supersonic Combustion Ramjet or Scramjet powered hypersonic technology.

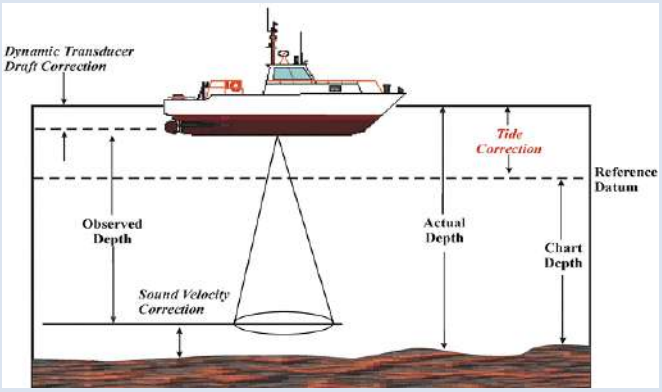
Defense Research & Development Laboratory (DRDL)

- **Part of** – DRDO.
- **Located in** – Hyderabad.
- **Role** – For the *design and development of state-of-the-art Missile Systems and technologies* required for the deterrence and defence of the country.
- **Technologies deployed on** – Underwater, sea, land as well as air based platforms.
- **R&D** - Aerodynamics and Airframe Design, Computational Fluid Dynamics, Ramjet and Scramjet Propulsion, Precision Fabrication, Systems Analysis, as well as the Command and Control systems for missile based weapon systems.

Hydrographic Survey

Indian Navy completes hydrographic survey of 25,000 sq. nautical miles of Mauritius.

- It determines the *physical features of an underwater* area like topographic or land surveys.
- **Usage –** To determine the *depth of a body of water*.
- **Purposes** - Building docks or marinas
  - Waterway planning
  - Diversion of water sources
  - Removing soils
  - Wreck location.



- All types of these surveys are conducted with the help of *Automatic Hydrographic Survey System (AHSS)* only.

Aatmanirbharta

- **Organized by** – Defence Research & Development Organization (DRDO).
- **Vision** – To empower India with cutting-edge technologies.
- **Theme** – Raksha Kavach - Multilayer Protection against Multi-domain Threats.
- **Purpose** – To showcase path-breaking innovations for national security during the 76th Republic Day Parade 2025.

Pralay

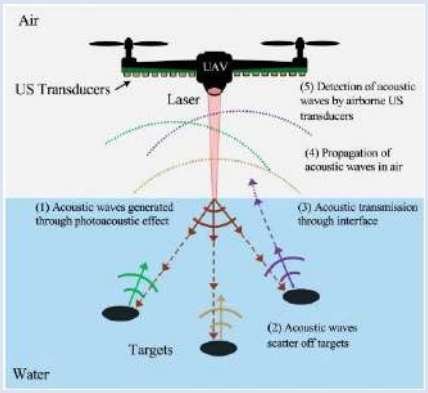
- **Pralay** – It is the *indigenous short-range* surface-to-surface quasi-ballistic missile.
- **Range** – Approximately *400 km.*
- It is the *1st ballistic missile in India* for conventional strikes.
- **Approved by** – Defence Acquisition Council (DAC).
- **Development by** – Research Centre Imarat, Hyderabad of DRDO
- **Capability** – To strike different types of targets using different types of warheads.
- **Deployment along** – Line of Control (LoC).
  - Line of Actual Control (LAC).

SANJAY - The Battlefield Surveillance System (BSS)

- **SANJAY** – It is an automated Battlefield Surveillance System (BSS) which integrates the inputs from all ground and aerial battlefield sensors.
- It produces a Common Surveillance Picture of the battlefield over secured Army Data Network & Satellite Communication Network.
- **Developed by** – Indian Army and Bharat Electronics Limited (BEL).
- **Applications** - Monitors vast land borders.
  - Prevent intrusions.
  - Assess situations with unparalleled accuracy.
  - Prove to be a force multiplier in intelligence, surveillance & reconnaissance.

Deep Sea Radar

Chinese scientists claim the build of world's 1st deep sea radar.



- **Concept** – It sits on the seabed and *detect & track aircraft flying high above.*
- **Capable of** – Detecting high-altitude aircraft.
- **Consists of** – A specially designed *acoustic sensor array* that can be deployed at depths of 3,280 feet (1,000 meters).
- **Tested** – These sensors detected and tracked incoming aircraft at altitudes of 5,000 meters.
- **Acoustic sensor** – It is a device designed to *detect and measure sound waves* or acoustic signals in the surrounding environment.

Anti-Submarine Warfare Shallow Water Craft (ASW SWC)

- **Objective** – To undertake anti-submarine operations in coastal waters, Low Intensity Maritime Operations (LIMO) and Mine Laying Operations.
- **Maximum speed** - 25 knots.
- **Endurance** - 1800 NM.
- **Capabilities**
- Interdiction/ destruction of sub surface targets in coastal waters.
- Carrying out Search and Rescue by day and night.
- To prosecute intruding craft as part of LIMO.

Indian Naval Sailing Vessel (INSV) Tarini

INSV Tarini, successfully passed through Point Nemo, Oceanic Pole in South Pacific.

- **INSV Tarini** – It is a *56-foot sailing vessel* built by Aquarius Shipyard Ltd.
- It was inducted in the *Indian Navy* on February 18, 2017.
- **Under** – Navika Sagar Parikrama-II.
- 2 women Navy officers, Dilna K. and Roopa A recently crossed Point Nemo ongoing global circumnavigation journey.
- **Expedition** – It is the most extended leg of the expedition, with a distance of approximately 5,600 nm (approximately 10,400 km).
- **Point Nemo** - Located in the South Pacific, which is the Oceanic Pole of inaccessibility, the most remote location on Earth.

HEALTH

9.8 Cells of Endocrine Glands

Why in News?

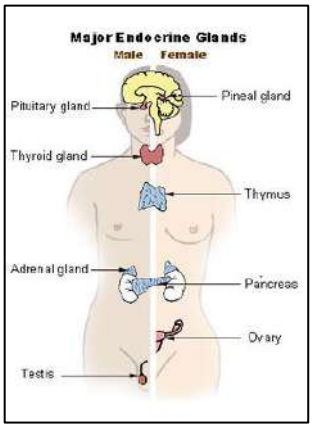
Recent analysis at the Weizmann Institute in Rehovot, Israel shows the number of cells in an endocrine gland that secrete hormones.

- **Endocrine Glands** – An organ that *makes hormones that are released directly into the blood* and travel to tissues and organs all over the body.
- **Functions** – It controls many body functions, including *growth and development, metabolism, and fertility.*

***Hormones** are signaling molecules found in most multicellular organisms which facilitate communication between organs and tissues in body that are far apart. The signals regulate a wide range of physiological and behavioral processes, such as growth and maturation, sleep, digestive functions, and stress responses.*

Endocrine Glands			
	Location	**Shape &/ Size**	**Weight**
Pineal gland	Midline of the brain	A grain of rice	50-150 mg
Pituitary gland	Hypothalamus of the brain	A pea	0.5–1 gram
Thyroid gland	Neck	A butterfly in shape	25 grams
Parathyroid gland	4 of which are in the neck	Size of a lentil seed	120 mg
Thymus	Between the lungs	Pyramid-shaped lymphoid organ	Average of 20 grams
Adrenal glands	Found atop each kidney	Triangular-shaped glands	5-10 grams in adults
Pancreas	Behind the stomach	Tadpole-shaped gland	80-100 grams
Ovaries	On either side of uterus in female	Oval-shaped glands	-
Testis	Underneath penis in male	Round organs	-

- **8 Major glands** – They are scattered *from head to toe.*
- **Findings** – Every hormone producing cell has *about 2,000 target cells.*
- The number of hormone-secreting cells are in proportion to the number of cells that are targeted.
- Only *1-2% of cells in the pancreas produce insulin*, which targets the liver and muscle cells.
- Parathyroid gland has about 10 million cells that secrete the parathyroid hormone.
- Adrenal cortex over 5 grams has 4.5 billion cells that secrete cortisol.
- Thyroid hormones keep up metabolic balance throughout the body and Pancreas has a major role in secreting digestive enzymes.



9.9 Norovirus Infection

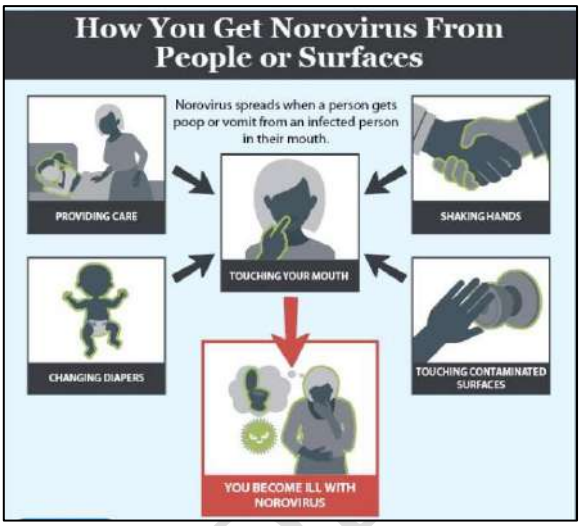
Why in News?

Recently, the norovirus cases are raising in the United States (US).

- **Norovirus** – It is a highly contagious virus, an influenza virus.
- **Winter vomiting bug** – Since norovirus is most common during winter like bugs, it is called as *Winter Vomiting Bug*.
- **Risk factors –** All age groups get infected but more vulnerable are children younger than 5 years old, older adults, and people with weakened immune systems.

*Norovirus is also called as **Stomach Flu** or Stomach Bug owing to its common symptoms associated with stomach.*

- **Transmitted through** – *Contaminated food* due to consumption of raw, oysters and other filter-feeding shellfish, water and surfaces
- **Primary transmission route** – O*ral-faecal*.
- **Incubation period** – It develops in *1 or 2 days* after exposure.
- **Symptoms –** Diarrhea, vomiting, nausea and stomach pain and dehydration (loss of body fluids).
    - **Other symptoms** – Fever, headache and body aches.
- Norovirus were previously known as **Norwalk virus**, was 1st identified in stool specimens collected during an outbreak of gastroenteritis in Norwalk city, United States.
- **No treatment** – There are n*o vaccines available* for the disease and even antibiotic drugs do not help to treat norovirus infections.
- **Precautions** - *Washing hands repeatedly* with soap after using the lavatory or changing diapers.



9.10 Human Metapneumovirus (HMPV) Infection

Why in News?

An outbreak of Human Metapneumovirus (HMPV) in China has raised alarm globally.

- **HMPV** – It is a common *respiratory virus* that causes lower and upper respiratory infections (like a cold).
- It falls in the Pneumoviridae family along with RSV.
- **Seasonal disease** – It usually *occurs in the winter and early spring*, similar to Respiratory Syncytial Virus (RSV) and the flu.

***Pneumoviridae family** includes Respiratory Syncytial Virus (RSV), measles and mumps.*

- **Risk factors** – ***All age groups***, especially among young children under the age of 14, older adults, & people with weakened immune systems.
    - Lung conditions such as *Asthma or Chronic Obstructive Pulmonary Disease (COPD)* should be extra cautious.
- **Transmission –** Through bodily secretions from coughs, sneezes
- Close contact with an infected person such as shaking hands, hugging.
- Touching a doorknob or a phone or a keyboard that may be contaminated with the virus & then touching the mouth, nose or eyes.
- **Incubation period** – *3 to 6 days.*
- **Symptoms** – Cough, runny or blocked nose, sore, throat, fever and wheezing which progress to *bronchitis or pneumonia*.
- **Treatment** – There is *currently no vaccine*, and antiviral treatment is not recommended.
- **Precautions** – *Wash hands often* with soap and water for at least 20 seconds.

***India** hadn't registered any unusual spike in winter respiratory diseases.*

9.11 Depersonalization and Derealization Disorder (DPDR)

Why in News?

Recently, an article described about the Depersonalization and Derealization Disorder (DPDR).

- **A mental health condition** – A state where individuals experience persistent *feelings of detachment from themselves* or their surroundings.

	Derealization	Depersonalization
Conditions	• A sense of feeling of detachment from environment, objects & people in it.	• A feeling of detachment from themselves.
Symptoms	• Distortion of the distance from the size or shape of objects • A heightened awareness of surroundings. • Feeling as recent events happened in the distant past.	• An inability to recognize or describe emotions. • Feeling unconnected to body, mind and feelings. • Sense of body and limbs are distorted and head is wrapped in cotton.

- **Susceptible population** – It *affects 1 to 2% of the global population*, predominantly youngsters.
- **Symptoms** – Sensation of being in a dream or fog.
    - The world appears flat, colourless or artificial.
    - *Distortions in visual perception*, with objects appearing either blurred or unusually sharp.
    - Sounds that seem either amplified or muted.
    - An altered perception of time, which may seem to move too fast or too slow.
- The above symptoms can last for hours, days, weeks or even months.
- **Treatment** – It is *treatable* by addressing the root cause, whether it is anxiety, trauma or depression.

9.12 Genome India Database

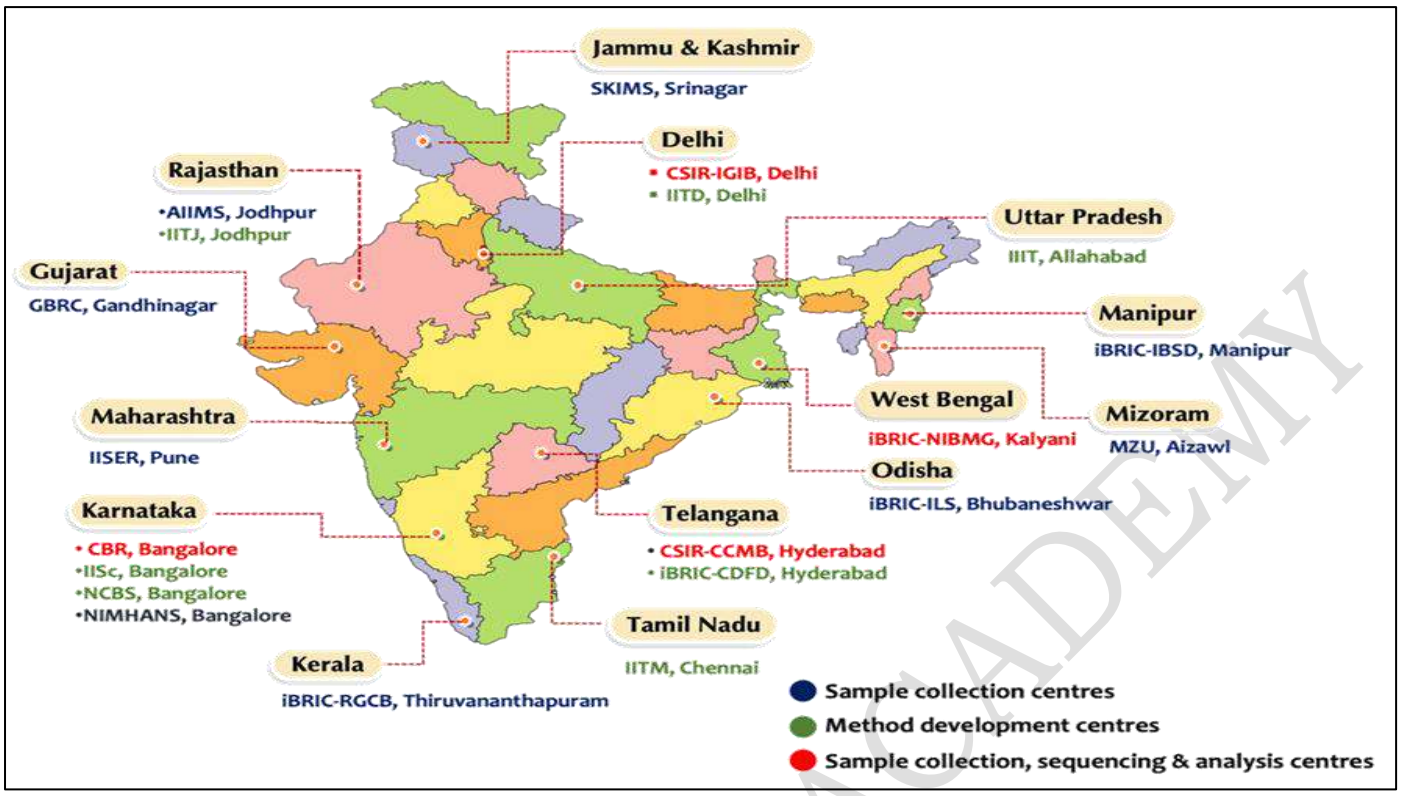
Why in News?

Recently, India has completed the 'Genome India' database'.

- **Aim** – To create a robust and comprehensive database of India's genetic diversity.
- **Housed at** – Indian Biological Data Centre (IBDC), Haryana.
- **Indian Genomic Data Set** – It is the entire collection of ***10,000 Whole Genome Sequencing (WGS) samples*** accessible to researchers across within India and globally.
- **Catalog of genetic variations** – The samples come from diverse Indian populations and provide a rich genetic diversity.
- It represents *83 population groups or about 2%* of the country's 4,600 population groups as a database.
- **Analysis** – The genomes estimate around *27 million low-frequency* (or relatively rare) *variants*, 7 million of them not found in similar reference databases around the world.
- Certain population groups show higher frequencies or different versions of the same gene.
- **Data privacy** – The database isn't classified by the names of castes or tribes but it is *numerically coded*.
- Researchers must send a proposal to access the data.
- **Significance** – It holds the potential *targeted clinical interventions* and advancing precision medicine for better healthcare.

*A **genome** is the complete set of genetic information in living organisms, which is stored in long molecules of DNA called Chromosomes.*

In Biotech, India now ranks 12th globally and 3rd in the Asia-Pacific region.



9.13 Breast cancer cases in India

Why in news?

According to a recent study the number of breast cancer cases in India is projected to rise by 50,000 annually this decade, with the economic burden estimated to an average $19.55 billion per year.

- **Breast Cancer** - Breast cancer is one of the most common cancers that affects women and people assigned female at birth (AFAB).
- It happens when cancerous cells in your breasts multiply and become tumors.
- About 80% of breast cancer cases are invasive, meaning a tumor may spread from your breast to other areas of your body.

Common types of breast cancer	Less common breast cancer types
• Invasive (infiltrating) ductal carcinoma (IDC)	• Triple-negative breast cancer (TNBC)
• Lobular breast cancer	• Inflammatory breast cancer (IBC)
• Ductal carcinoma in situ (DCIS)	• Paget's disease of the breast

- **Symptoms –** Lumps, Skin changes, Nipple changes, Nipple discharge, Pain and others.
- **Complications -** The most significant complication is metastatic breast cancer, spreads to other areas of your body, including your brain, bones, liver and lungs.
- **Treatment –** Breast cancer is treated with a combination of surgery, radiation therapy, chemotherapy, hormonal therapy, and targeted therapy.

Study Findings

- **Cancer rate** - Cancer is now reported as the 5th-leading cause of death in India (5.7% of all deaths), as per the Medical Certification of Cause of Death (2018).
- The rise of around 11.5% in cancer incidence is recorded in India, along with a 13.8% increase in cancer-related deaths every year.

- **Breast cancer rate** - Over the past 26 years, the age-standardized incidence rate of breast cancer in females increased by 39.1% from 1990 to 2016, with the increase observed in every State.
- The number of breast cancer cases in India is projected to rise by 50,000 annually this decade.
- **Vulnerable** - Current trends point out that a higher proportion of the disease is occurring at a younger age in Indian women, as compared to the West.
- **Survival rate in India** - The survival rate of patients with breast cancer is poor in India as compared to Western countries.
- It is due to earlier age at onset, late stage of disease at presentation, delayed initiation of definitive management and inadequate/fragmented treatment.
- **Associating factors -** Firstly, breast cancer is associated with lower levels of physical activity, socioeconomic status, utilization of health facilities and health insurance.
- A survey showed that 14.2% of patients discontinued treatment, and only 9% of the patients were covered by any health insurance scheme.
- **Co-morbidity** - Breast cancer is also associated with high co-morbidity, with hypertension and diabetes being the most common co-morbidities, thus contributing to a high economic burden.

9.14 Bluetongue Disease

Why in News?

The presence of multiple Culicoides species responsible for the larger number of bluetongue virus transmission in the Andaman and Nicobar Islands.

- Bluetongue is a ***viral disease*** that affects ruminants like sheep, cattle, and goats.
- **Symptoms –** Fever, Swelling of the face, lips, tongue, nose, jaw, and eyelids, Excessive salivation, Congestion and nasal discharge, Ulcers in the mouth and nose, Lameness, Respiratory problems, Hemorrhages in the skin and other tissues.
- **Transmission -** The disease is spread by the bite of a Culicoides midge.
- The midge takes blood from an infected animal and spreads the disease to other animals when it bites them again.
- It is ***not contagious*** between animals.

The Indian Culicoides fauna now includes 93 valid species, many of which are recognised as confirmed or potential vectors of important pathogens of animal health.

- **Affected animals -** Sheep are usually the most affected.
- Cattle and goats can carry the virus for a period of time and transmit it to other animals.
- Other ruminants like deer, camels, llamas, giraffes, bison, buffalo, wildebeest, and antelope can also be affected.
- **Geographic distribution -** Bluetongue is found in tropical and subtropical regions, between 53°N and 35°S.
- It has been found in Africa, the Americas, Australia, the Middle East, and some countries of southern Asia and Oceania.
- **Vaccination –** Vaccination is used as the most effective and practical measure to minimize losses related to the disease.
- European Medical Agency has recently recommended the approval of the vaccines *Bluevac-3 and Syvazul BTV 3* to protect sheep against bluetongue disease.
- **Treatment -** There is no specific treatment for animals with bluetongue apart from rest, provision of soft food, and good husbandry.
- Bluetongue is listed by the World Organization for Animal Health (OIE) as a *notifiable disease.*

9.15 Guillain-Barre Syndrome (GBS)

Why in News?

Union Health Ministry has recently sent a team to Pune to assess the situation following a reported outbreak of Guillain-Barré syndrome with 73 cases so far.

- It is an ***autoimmune neurological disorder*** in which a person's immune system attacks their ***peripheral nerves***, leading to muscle weakness that can progress to paralysis.
- **Symptoms** – It starts usually with tingling and weakness in the feet and legs before spreading to the upper body, arms and face.
- It also includes a pins and needles feeling in the toes, fingers, ankles or wrists, back pain, pain in the legs, not being able to walk or climb stairs, trouble with facial movements and double vision.
- For some people this can lead to paralysis of the legs, arms or face.
- **Affecting age** - It can develop over a few days or several weeks. People of any age can be affected, but it is more common in adults and males.
- The condition is rare, with an estimated incidence of 1/2 per 100,000 population.
- **Causes** - The causes of GBS are still not fully understood- in most cases, it occurs after a viral or bacterial infection.
- According to the World Health Organization (WHO), infection with the bacteria Campylobacter jejuni, which causes gastroenteritis is one of the most common risk factors for GBS.
- People can also develop GBS after having the flu or other viral infections including cytomegalovirus, Epstein-Barr virus, and the Zika virus.
- In rare instances, vaccinations may increase the risk of people getting GBS, but the chance of this occurring is extremely low.
- GBS can lead to life-threatening complications when it affects the autonomic nervous system which controls your blood pressure and heart rate.
- **Treatment -** There is no known cure for GBS. Treatment includes supportive care and some immunological therapies.

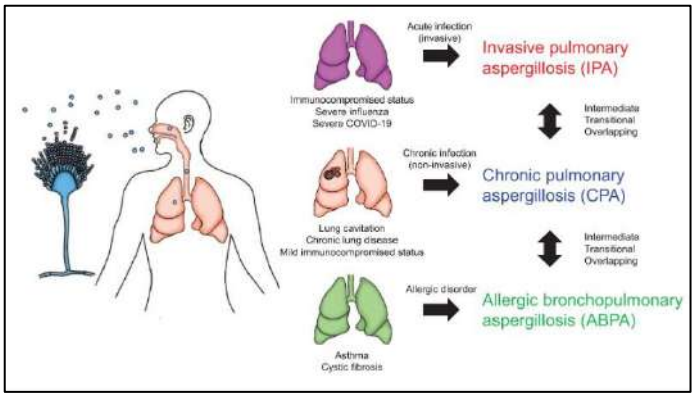
9.16 Chronic Pulmonary Aspergillosis (CPA)

Why in News?

Recently, a new research has identified a Chronic Pulmonary Aspergillosis (CPA) in tuberculosis survivors among Assam's tea plantation workers.

According to the National Tuberculosis (TB) Prevalence Survey 2019-2021, TB has been a major public health issue across the tea belts in Assam's Brahmaputra and Barak valleys, afflicting 217 per 1,00,000 population.

- **CPA** – It is a serious and ***long-term fungal infection*** that affects the lungs.
- **Caused by** – *Aspergillus fumigatus, a fungus* that strikes individuals with immunodeficiency.
- **Conditions** – It is a chronic lung disease that occurs commonly in ***pre-existing lung cavities***.
- Poverty, poor nutrition, kitchen smoke, close contact with smear-positive patients and living in congested environments.
- **Risk factors** – It mostly occurs in,
    - Post-Tuberculosis (TB) or active TB patients.
    - People with weakened immune system or
    - Lung diseases.



- **Transmission** – It is not a contagious disease.
- It can't be passed from person to person.
- **Incubation period** – *3 months* or more.
- **Symptoms** – Chronic cough, haemoptysis (coughing blood), weight loss or fatigue and other respiratory.

Using advanced serological testing and radiological imaging, the researchers recorded a CPA prevalence of 17.18% in the year-long study and seropositivity was 18.5% in active TB patients but spiked to 48.9% in those who had completed treatment.

SHANKAR IAS ACADEMY

- **Impact** – It causes severe bleeding in the lungs, which lead to be fatal.
- **Treatment** – It vary depending on the severity of symptoms and any underlying conditions.

9.17 Inherited Retinal Diseases (IRDs)

Why in News?

According to a recent study, there is a higher prevalence of Inherited Retinal Diseases (IRDs) situation in India.

- **IRDs** – It is a ***genetic disorder***, a change or a variant, in one or more genes that contribute to proper retinal function.
- **Genetic mutations** – It stems from *mutations in more than 300 genes* responsible for the function of the retina, the light-sensitive tissue at the back of the eye.
- It varies significantly across different communities, and it is difficult to identify common mutations.
- **Impacts** – It ***affects the gene's ability*** to do its job properly.
- The mistake gene doesn't make a protein and cells in the retina degenerate and cause vision loss.
- **Vulnerables –** It affects individuals of *all ages*.
- **Causes** – Lose sight shortly after birth
  - Gradual deterioration over time
  - Progressive vision loss
  - Often resulting in blindness.
- **Treatment - Gene therapy** – It is for blindness caused by mutations in the *RPE65* genes and treat various inherited eye disorders.
- **RNA-based therapies** – To restore protein production in retinal cells without altering the underlying DNA.
- Treat retinal degenerative diseases caused by single-point mutations.

According to the World Health Organization (WHO), more than 2.2 billion people worldwide experience some form of vision impairment.

Studies have revealed significantly higher prevalence, with 1 in 372 individuals in rural South India, 1 in 930 in urban South India, and 1 in 750 in rural Central India affected by these conditions.

Other Important Topics

Genome-scale metabolic models (GEMs)
• Genome-scale metabolic models (GEMs) are *mathematical models* that represent the relationship between an organism's genotype and phenotype. • They are used to study the metabolism of organisms and predict cellular states.
Huntington's Disease
• **Cause due to** – A *fault in HTT gene*, which is responsible for making the huntingtin (Htt) protein. • **Condition** – Mutated gene creates dysfunctional Htt protein. • **Symptoms –** It causes *degeneration of neurons* affecting movement, cognition, and memory. • **Recent findings** - *Modified fruit flies* show mutated human HTT gene effects.
Parkinson Disease (PD)
• **PD** – It is a *brain condition* that causes problems with movement, mental health, sleep, pain and other health issues. • **Symptoms** – Tremors, painful muscle contractions and difficulty speaking.

- **Risk factors** – Usually occurs in *older people,* and younger people also affected.
  - Men are affected more than women.
- **Treatment** – There is *no cure,* therapies and medicines can reduce symptoms.

Malaria-Free Certification

- **Elimination Process** – It requires a country to demonstrate the transmission of indigenous malaria has been interrupted nationwide for at least *3 consecutive years*.
- **Officially recognized by** – World Health Organization (WHO) of a country's malaria-free status.
- **Advisory body** – Technical Advisory Group on Malaria Elimination and Certification (TAG-MEC).
- **Georgia** – It has officially been *certified as malaria-free*.
- **Turkey** – It remains the only country in the WHO European Region *not yet certified* malaria-free.

National Leprosy Eradication Programme (NLEP)

- **Established in** – *1983*.
- **Umbrella of** – National Health Mission (NHM).
- **Vision** – Leprosy-free India.
- **Mission** – To provide quality *leprosy services free of cost* to all sections of the population.
- **Objectives -** To reduce prevalence rate less than 1/10,000 population at sub national and district level.
- **National level** – To reduce Grade II disability% < 1 among new cases and cases < 1 case per million population.

Molasses

- **Molasses** – It is a thick syrup and *by-product of making sugar*.
- It contains more vitamins and minerals than other sweeteners but is still *high in sugar*.
- It is used in *Bioethanol production*.
- **Types** – It vary in color, consistency, flavor and sugar content.
- **Nutrition content** – Manganese, magnesium, copper, selenium, potassium, iron and calcium.

10. DISASTER MANAGEMENT

10.1 State Disaster Response Fund (SDRF)

Why in News?

Recently, the Union government has permitted the Kerala government to utilize Rs.120 crore from the State Disaster Response Fund (SDRF) for rehabilitation measures at Wayanad.

- **SDRF** – It is the ***primary fund available with State Governments*** for responses to notified disasters.
- **Established in** – *2005*, under Section 48 (1) (a) of the *Disaster Management Act, 2005*.
- **Nodal Ministry** – Ministry of Home Affairs.
- **Immediate relief –** SDRF shall be *used only for meeting the expenditure for providing immediate relief* to the victims.

Disasters covered under SDRF	Cyclone
	Drought
	Earthquake
	Fire
	Flood
	Tsunami
	Hailstorm
	Landslide
	Avalanche
	Cloudburst
	Pest Attack
	Frost
	Cold Waves

- **Funding** – It is based on the ***recommendations of the Financial Commissions.***
- **Contributions to the fund** – It is made by the *Central Government and State Governments* to all the states.
    - **For all states expect North-Eastern and Himalayan States** – The contribution is made by the Central Government and State Governments in the ratio of ***75:25***.
    - **For North-Eastern and Himalayan States** – The contribution is in the ratio ***90:10*** for union government and states.
    - The Himalayan states includes Sikkim, Uttarakhand, Himachal Pradesh, Jammu and Kashmir.
- **2 equal installments** – The annual central contribution is released in *2 equal installments* as per the recommendation of the Finance Commission.
- **Local Disasters –** A State Government may use up to 10% of the funds available under the SDRF, which they consider to be 'disasters' within the local context in the State.
- They are *not included in the notified list of disasters of the Ministry of Home Affairs* and should be a listed state specific natural disasters of a state.
- **State specific natural disasters** – The State Government has listed the State specific natural disasters and notified clear and transparent norms and guidelines for such disasters with the approval of the State Authority, i.e. the ***State Executive Authority (SEC)***.

Other Important Topics

Subhash Chandra Bose Aapda Prabandhan Puraskar

- **Annual award** – To recognize and honour the invaluable contribution and selfless service rendered by individuals and organizations in India *in the field of disaster management.*
- It is announced every year on 23rd January, the birth anniversary of Netaji Subhash Chandra Bose.
- **Award for institution** - A cash prize of Rs. 51 lakh and a certificate.
- **Award for individual** - A cash prize of Rs. 51 lakh and a certificate
- **2025 award for Institution** - Indian National Centre for Ocean Information Services (INCOIS).

INCOIS

- **Established in** – *1999*, at Hyderabad, Telangana.
- It is integral to India's disaster management strategy, specializing in early alerts for ocean-related hazards.
- **Activities** – It provides tsunami alerts, high-wave, cyclone, and storm surge forecasts, helping to safeguard coastal areas and maritime operations.
- It assisted during the 2013 Phailin and 2014 Hudhud cyclone
- **Recognized by** – *UNESCO* as a top Tsunami Service Provider.
- **Awards** – It received the *Geospatial World Excellence in Maritime Services Award in 2024* and the Disaster Risk Reduction Excellence Award in 2021.

Developments of INCOIS

- **Indian Tsunami Early Warning Centre (ITEWC)** – It provides *tsunami alerts within 10 minutes*, serving India and 28 Indian Ocean countries.
- **Search and Rescue Aided Tool (SARAT)** – To assist the Indian Coast Guard, Navy and Coastal Security Police, in *locating individuals or objects lost at sea.*
- **SynOPS visualization platform** – It integrates real-time data to strengthen response coordination during extreme events.

11. INDICES AND REPORTS

11.1 Fiscal Health Index (FHI), 2025

Why in news?

The Fiscal Health Index (FHI) was recently released by Niti aayog that provides a comprehensive assessment of the fiscal health of 18 major States.

- **Aim** – To throw light on the fiscal status at the sub-national level and guide policy reforms for sustainable and resilient economic growth.
- **Fiscal Health Index 2025** – Is *first of kind in India*, a comprehensive assessment with insights into state-specific challenges and areas for improvement.
- **Five key sub-indices** – The index is based on 5 key sub-indices that include *Quality of Expenditure, Revenue Mobilisation, Fiscal Prudence, Debt Index, and Debt Sustainability*.
- **Launched by** – Niti Aayog.
- **18 major States** – The index assess the fiscal health of the only 18 major states.
- **Comptroller and Auditor General (CAG)** – The report uses the data from CAG.
- **Odisha** – With a cumulative *score of 67.8*, Odisha tops the ranking in fiscal health among 18 major States, *followed by Chhattisgarh and Goa* with scores of 55.2 and 53.6, respectively.
- Odisha tops the Debt Index (99.0) and Debt Sustainability (64.0) rankings with better than average scores under Quality of Expenditure and Revenue Mobilization.
- **Strong fiscal health** – The achiever States display strong fiscal health, excelling in revenue mobilization, expenditure management, and debt sustainability.
- **West Bengal and Punjab** – States like West Bengal and Punjab witnessed *growing debt burdens*, increasing debt-to-GDP ratios and raising serious concern about debt sustainability.
- **Significance** – FHI helps to promote more integrated approach to fiscal health and sustainable growth, with shared responsibility of both levels of government in achieving national prosperity.
- FHI offers a roadmap for achieving fiscal consolidation, improving transparency, and fostering effective resource management.
- FHI is not merely a ranking but *a tool designed to assess* and thereby improve the fiscal health of States.
- It provides *a framework to evaluate the financial well-being of state economies* through key fiscal indicators.

11.2 Annual Status of Education Report (ASER), 2024

Why in News?

The ASER 2024 annual education report based on household surveys across 618 rural districts, reveals high enrolment but serious learning gaps in rural India, with basic reading and math skills still a challenge.

- It is a nationwide household survey that captures the status of ***children's enrollment and learning outcomes in rural India*** every year since 2005.
- It is a ground level survey released by ***NGO Pratham Foundation.***
- Schooling status is recorded for children in the ***age group of 3-16,*** and children in the ***age group of 5-16*** are tested on their ability to read simple text and do basic arithmetic.

Key Highlights of the report

- **Enrolment & Dropouts** - Over 90% of children aged 6-14 are enrolled in school.

- Hike in government school enrolment in several states like Bihar, Uttar Pradesh, and Madhya Pradesh, alongside declining private school enrolment.
- But among 15-16-year-olds, nearly 8% are not in school. This dropout rate is even higher in states like Uttar Pradesh (13%), Bihar (8.6%), Assam (5%), and West Bengal (5.4%).
- **Learning gaps –** Despite high enrolment the report shows that only about 50% of Class 5 students can read a Class 2-level text.
- The learning gap starts early by Class 3, only 27% of children can read at the expected level, and just 22% can do simple subtraction.
- In some states, reading levels have even declined. Also, less than 30% of Class 5 students can do a basic division problem. Even in Class 8, many students struggle with fundamental arithmetic.
- States like Punjab, Kerala, and Himachal Pradesh have shown signs of improvement in reading and arithmetic skills.
- Bihar, Uttar Pradesh, West Bengal, and Madhya Pradesh continue to struggle with foundational learning.
- **Digital learning gap -** Over 80% of children ***aged 14-16*** have access to a smartphone, and many are comfortable using basic digital tools.
- But the problem is only about 57% use it for educational purposes (57.7% of boys vs 50.1% of girls).
- **Infrastructure gap in schools -** School facilities have improved in recent years, with most schools offering essential services.
- Over 90% of schools provide mid-day meals, and nearly 80% of schools have drinking water facilities and functional toilets, though some regions still struggle with maintenance.
- However, while electricity access has expanded, library usage remains low, with many schools having books that students rarely use.
- **Community and Parental Involvement –**Local initiatives and support networks have helped bridge learning gaps.
- Parental involvement in learning activities at home has increased by nearly 10% since 2022.
- In states like Rajasthan, Maharashtra, and Tamil Nadu, local initiatives have also been introduced to help bridge learning gaps.
- **Top-performing states** - Kerala, Himachal Pradesh, and Punjab continue to lead in learning levels, with better school infrastructure and teacher training.
- **Struggling states -** Bihar, Jharkhand, and Uttar Pradesh have some of the lowest learning outcomes, with students struggling in reading and math.
- **Mixed results -** States like Maharashtra and Gujarat have good enrolment numbers but show stagnation in learning progress.
- These state-wise differences highlight the need for region-specific policies rather than a one-size-fits-all approach.

Other Important Topics

Readiness Assessment Methodology (RAM)

- **RAM** – It includes a range of *quantitative and qualitative questions* designed to gather information about different dimensions related to a,
- Country's AI ecosystem.
- Legal, regulatory, social, cultural, economic, scientific, educational, technological and infrastructural.
- **Purpose** – To support member states in their implementation of the UNESCO recommendation on the *Ethics of AI*.

SHANKAR IAS ACADEMY

AI RAM in India
• It marked the *2nd in a series* of 5 consultations to shape India's AI policy. • **Aim** – To craft an *India-specific AI policy report*, identifying strengths and growth opportunities within India's AI ecosystem. • **Initiated by** • United Nations Educational, Scientific and Cultural Organization (UNESCO). • Ministry of Electronics and Information Technology (MeitY).
Body Mass Index (BMI)
• **BMI** – It is an estimate of body fat by using height and weight measurements. • It is a ratio of weight to height. It is a tool used by healthcare providers. • **Features** – It measures patients' risk for diseases that can occur with overweight and obesity. • It is not always an accurate representation of body fatness.

12. OTHERS

12.1 World AIDS Day

According to the Tamil Nadu State AIDS Control Society (TANSACS), the State had declined in the HIV prevalence from 1.18% in 1997 to 0.16% during 2023-2024.

- **HIV** - Human Immunodeficiency Virus (HIV) is a retrovirus that targets the body's white blood cells, and weaken the immune system.
- **AIDS** - acquired immunodeficiency syndrome (AIDS) is occurred at the late stage of HIV Infection.
- It occurs when the body's immune system is badly damaged because of the virus.
- **Transmission of HIV & AIDS** – It is transmitted by the exchange of body fluids from people, including blood, breast milk, semen, and vaginal secretions.
    - It is not spread by kissing, hugging, shaking hands, or sharing personal objects, food or water.
- **Treatment of HIV & AIDS** – There is no cure for this infection.
- **Prevention of HIV & AIDS** – It is a preventable disease which is treated with antiretroviral drugs.
- Current antiretroviral therapy (ART) does not cure HIV infection but allows a person's immune system to get stronger.
- **World AIDS Day -** It has observed every year on ***1st December*** since 1988 after a recommendation by the World Health Organization (WHO) and the United Nations (UN).
- It serves as a global movement to unite people in raising awareness about HIV and AIDS.
- The ***first known cases of aids*** were reported in 1981.
- It is an opportunity for every community and individual to honor the more than 32 million people who have died worldwide from AIDS-related illness.
- **World AIDS Day, 2024 - Theme** - Take the Rights Path, My Health, My Right.
- It seeks to foster inclusivity, reduce stigma, and encourage global cooperation to eradicate AIDS as a public health threat.
- **Global response** - The Joint United Nations Programme on HIV/AIDS (UNAIDS) is leading the global effort to end AIDS as a public health threat ***by 2030*** as part of Sustainable Development Goals.
- **India's Response – *National AIDS and STD Control Programme (NACP)*** launched on 1992 for prevention and control of HIV/ AIDS.

- Over 35 years, it has become one of the largest HIV/AIDS control programs in the world.
- HIV Estimation in 2012, has demonstrated an overall reduction of 57% through this programme.
- The adult HIV prevalence has decreased from 0.41% in 2001 to 0.27% in 2011.
- ***Wider access to Anti-Retroviral Therapy (ART)*** has resulted in 29% reduction in estimated annual deaths due to AIDS.
- It is committed to achieving ***Millennium Development Goals (MDG)*** in reducing HIV mortality.
- Efforts are being made to reduce the number of HIV cases to zero and there is a long way to go for an "AIDS Free India".

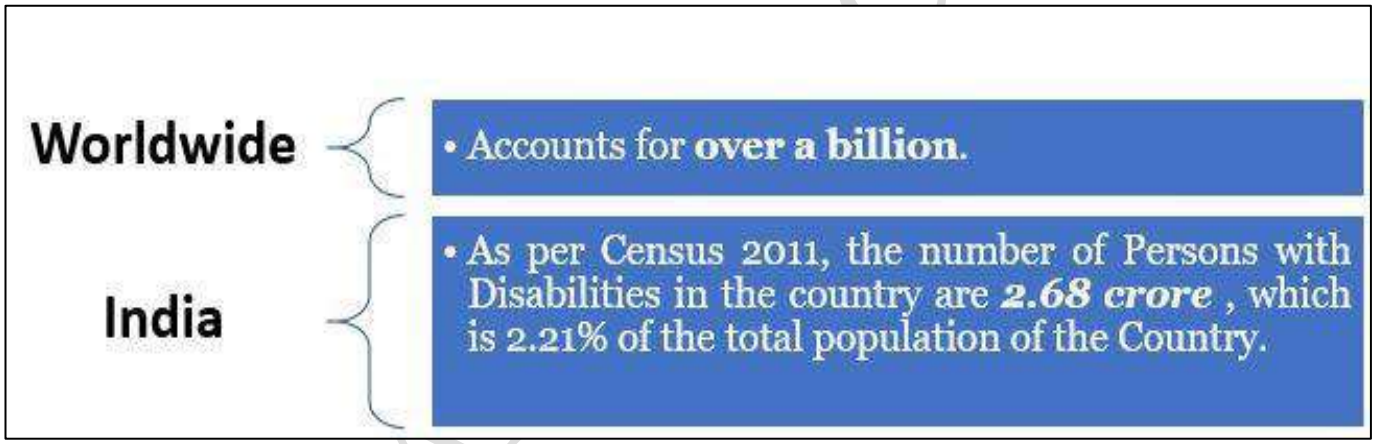
12.2 World Braille Day

Why in News?

Recently, the World Braille Day was observed on January 4th, to commemorate the birthday of Louis Braille.

- **Braille** – It is a tactile representation of ***alphabetic and numerical symbols using 6 dots*** to represent each letter, number and even musical, mathematical and scientific symbols.
- **Significance** – It is used by *blind and partially sighted people* to read the books and periodicals as those printed in a visual font.
- **Demographic Status**:

*Braille, named after its inventor, **Louis Braille** in 19th century in France.*



- According to the **Rights of Persons with Disabilities (RPWD) Act, 2016**, there are **21 types of Disabilities** which includes Locomotor Disability, Visual Impairment, Hearing Impairment, Speech & Language Disability, Intellectual Disability, Multiple Disabilities, Cerebral Palsy, Dwarfism etc.

Initiatives for Visually Impaired Person

- **National Association for the Blind** – It aims to make approximately 10,000 pages of *documents of government schemes and legal reliefs*, accessible to persons with visual disabilities.
- **National Institute for the Empowerment of Persons with Visual Disabilities (NIEPVD) (Divyangjan)** – It works in the field of visual disability for the education, training, rehabilitation & empowerment of persons since 1943.
- **Model School for the Visually Handicapped (MSVH)** – It imparts *education to children* from the Bal Vatika to senior secondary level.
- **Braille Development Unit** – Contribution to the development of *Braille Codes* in different Indian languages.
- **National Accessible Library** – To provide *learning materials* in various accessible formats Braille, large print, audio and E-pub.
- **Braille Production** – NIEPVD infrastructure for printing Braille textbooks and magazines.

- It infrastructure comprises the *Central Braille Press established in 1951*, the Regional Braille Press established in 2008 at Chennai and 25 other Braille Presses established by the Government.
- The Braille literature in the following *14 languages*, that include Assamese, Bangla, English, Garo, Hindi, Khasi, Kannada, Lusai, Nagamese, Punjabi, Sanskrit, Telugu, Tamil and Urdu.

12.3 Republic Day Awards

Why in News?

President Draupadi Murmu awards 942 service medals, including 95 for gallantry, for personnel of various central and state police forces on the eve of India's 76th Republic Day.

Civilian Service Awards

- The highest honours among the civilian awards are the Bharat Ratna and the Padma Awards – the Padma Vibhushan, the Padma Bhushan and the Padma Shri.

Civilian Service Awards	
Bharat Ratna	• India's highest and most prestigious civilian honour, awarded for exceptional service in any field art, literature, science, or public service. • The Prime Minister recommends the nominees for this award, and a ***maximum of 3*** persons can be conferred the Bharat Ratna in a year.
Padma Vibhushan	• It is for distinguished service of higher order. • Winners are selected by the Padma Awards committee. • Any person working in any field with the exception of Government employees, barring doctors and scientists are eligible for the award. • The nomination process is open to the public, and allows people to nominate themselves.
Padma Shri	• It is for distinguished service in any field. The award winners are selected by the Padma Awards committee. • Any person working in any field with the exception of Government employees, barring doctors and scientists are eligible for the award. • The nomination process is open to the public, and allows people to nominate themselves.

Service Medals

- It recognize distinguished service, dedication, and exceptional contributions by personnel in the Armed Forces, Paramilitary Forces, and Police.
- They are announced on Republic Day and Independence Day.
- It includes President's Medal for Distinguished Service (PSM) and Medal for Meritorious Service (MSM).

Service Medals	
President's Medal for Distinguished Service (PSM)	• It is awarded for a special distinguished record in service.
The Medal for Meritorious Service (MSM)	• It is awarded for valuable service characterized by resource and devotion to duty.

- For the Armed Forces, the highest honours are the Param Vishisht Seva Medal, the Ati Vishisht Seva Medal and the Vishisht Seva Medal.

Gallantry Awards
• Medals for gallantry are awarded to members of the armed forces, paramilitary forces, and civilians for bravery and heroic action.

Gallantry Awards	
Wartime Awards	• Presented to armed forces personnel for acts of bravery in the face of the enemy. • Highest honours include the Paramvir Chakra, the Mahavir Chakra, and the Vir Chakra.
Peacetime Awards	• Highest honours include the Ashoka Chakra, the Kirti Chakra, and the Shaurya Chakra • These awards can be awarded to armed forces, paramilitary forces, police, or civilians.
Police Gallantry Medals	• Announced ***twice a year*** on Republic Day and Independence Day. • The President's Medal for Gallantry is awarded to those who have done a rare conspicuous gallant act of exceptional courage & skill. • The Police Medal for Gallantry recognizes acts of bravery and courage in the line of duty.
Civilian Gallantry Medals	• Recognize civilians for acts of bravery and saving lives. • The Jeevan Raksha Padak Awards are given for lifesaving acts of service by people from all walks of life. • The National Bravery Awards recognizes children who show exceptional courage.

12.4 World Leprosy Day

Why in News?

The World Health Organization (WHO) has requested governments to prioritize leprosy elimination and ensure sustained funding for surveillance, treatment, care and support.

World Leprosy Day

- It is observed annually on the ***last Sunday*** of January since 1954.
- It was established by Raoul Follereau in honor of ***Mahatma Gandhi's*** compassion for leprosy patients.
- **Aim -** To raise public awareness about leprosy.
- **World Leprosy Day, 2025 – Theme** - 'Unite, Act, and Eliminate Leprosy'.

Leprosy

- It is a neglected tropical disease that primarily affects the nervous system.
- It is also known as Hansen's disease.
- It is an infectious disease caused by ***Mycobacterium lapre*** that causes severe, disfiguring skin sores and nerve damage in the arms, legs, and skin areas around the body.
- It's more common in people living in poverty.
- **Symptoms -** Most prominent in cooler parts of the body such as the hands, feet, and face.
- In some cases, body parts may lose their sense of touch and pain, increasing the likelihood of injuries such as cuts and burn.
- **Transmission** - Leprosy is not so contagious, repeated contact with nose and mouth droplets from someone with untreated leprosy can spread.

- **Treatment** - Leprosy is curable with antibiotics, Treatment usually lasts one to two years, and early treatment can prevent disability.
- **Global scenario** - In 2023, 1,82,815 new cases were reported from more than 100 countries, with 95% of those concentrated in 23 global-priority countries.
- Alarmingly, more than 5% of the new cases were reported with Grade 2 Disability (visible deformity), highlighting delays in detection.
- 5.6% of the new cases were among children, with some countries reporting child rates exceeding 30%, indicating ongoing transmission.
- **Jordan** became the 1st country to be verified and acknowledged by the WHO for elimination of leprosy, demonstrating what is possible with focused and concerted efforts
- Additionally, in 2023, 56 countries reported zero new case of leprosy.
- **Scenario in India -** India accounts for 53% of the global leprosy cases.
- As of recent statistics, India has successfully achieved the goal of eliminating leprosy as a public health problem, defined as having less than 1 case per 10,000 people.
- **Global Leprosy Strategy -** The Global Leprosy Strategy 2021-2030 has a vision of zero disease, zero disability and zero stigma and discrimination.

12.5 Pongal Bird Count (PBC)

Why in News?

Recently, the Pongal Bird Count completed its 10 years.

- **PBC** – It is an initiative of the Tamil Birders Network.
- It is an *annual bird monitoring programme* for the state of Tamil Nadu.
- **1st PBC** – It was conducted in *2015*.
- **Time period** – It happens *every year during the Pongal Festival* which falls in January.
- **Purpose** – To know the snapshot of distribution and abundance of the birds of Tamil Nadu.

Pongal Bird Count (PBC), 2025

- **Organized by** – Tamil Birders Network.
  - Bird Count India.
- **Total bird species** – *332*, were spotted across the state.
- **Decline in bird count** – The number of birds is lower during this year, where last year a total of *345 bird species spotted*.
- **Reasons** – It attributed to many reasons including,
  - Rains and unscientific de-silting of water bodies that wiped off natural vegetation from the bunds.
  - Dumping waste in lakes unaware of the presence of domestic and migratory birds.
  - Copious water in the lakes.
  - Brimming lakes.

Important Spotted Bird Species	
Northern pintail	Blue-Tailed Bee
Northern shovelers	Indian Pita
Barn swallow	Paradise Flycatcher
Northern pintail	Brown-Breasted Flycatcher
Grey wagtail	Red-Throated Flycatcher
White-naped tit	Eurasian Spoonbill
Greenish warbler	Black-Headed Ibis
Indian blue robin	Black Drongos
Barn swallows	Cattle Egrets
Marshall's Iora	Glossy Ibis
White-bellied Sea eagle	Orange Minivet
Asian fairy-blue bird	Blue Rock Thrush
Racket-tailed drongos	Stints
Jerdon's leafbird	Wood Sandpipers
Puff-throated babbler	Eurasian moorhen
Pacific golden plover	Pheasant-tailed jacana

Other Important Topics

Quality Control Order (QCO) for Steel

- **Standardization** – Uniform specifications, testing methods, and manufacturing processes for steel production.
- Manufacturers are required to obtain *BIS license* for manufacturing.
- So far, 151 such steel standards formulated by BIS, have been incorporated in the QCO.

Awardees from Indian Railways

- They have the largest number of awardees of government for any single organization in India.
- **Awardees** - 183 Arjuna, 28 Padma Shri, 12 Dhyan Chand, 13 Dronacharya and 9 Major Dhyan Chand Khel Ratna Awardees.
- **Sports wing in railways** - Railway Sports Promotion Board.

Railway Sports Promotion Board

- **Started in** - 1928.
- **Affiliation** – With 28 National Sports Federations and with USIC (World Railways Sports Association).
- **Sportsperson** – More than 9000 sportspersons are on roll of Indian Railways in 29 game disciplines of whom about 3000 are active sportspersons.

18th Pravasi Bharatiya Divas Convention

- **Pravasi Bharatiya Divas** – It is also known as Non-Resident Indian (NRI) Day, is celebrated on January 9.
- **Commemoration day** – Of the return of Mahatma Gandhi from South Africa to India in 1915.
- **1st celebrated in** – 2003.
- **Revised in** – 2015, to celebrate the event once every 2 years.
- **Importance** – To mark the contribution of overseas Indian Community towards the development of India.

Pravasi Bharatiya Samman Awards

- **Award** – It is the highest honour conferred on overseas Indians.
- **2025 awardees** - It include, among others,
    - President of Trinidad & Tobago
    - Christine Carla Kangaloo in public affairs
    - Baroness Usha Kumari Prashar from the UK in politics
    - Dr Sharmila Ford from the U.S. in community service.

National Youth Day (12th January)

- **Commemoration** – On the birth anniversary of Swami Vivekananda.
- **Declared in** – 1984.

- Since 1985 the event is celebrated in India every year.

Viksit Bharat Young Leaders Dialogue

- Indian PM to interact with 3000 young leaders selected through a merit-based, multi-level selection process from over 30 lakh participants.
- **Aligns with** – Indian PM's Independence Day call to engage 1 lakh youth in politics without political affiliations.
- **Importance** – It provides them a national platform to make their ideas for Viksit Bharat, a reality.

World Hindi Day 2025

- **Day** – It is celebrated every year on January 10.
- It is an important day that celebrates the promotion of the Hindi language at a global level.
- **2025 theme** – A Global Voice of Unity and Cultural Pride.

Khelo India ASMITA Women's League

- **Conducted by** – Sports Authority of India (SAI), in collaboration with National Sports Federations (NSFs).
- **Objectives** - To increase the participation of women in sports by organising leagues in various disciplines.
- To provide competition exposure to women athletes of different age categories across the country.
- **Event** – ASMITA Khelo India Women's Yogasana League 2024-25 sees over 7000 participations.

Khelo India Winter Games (KIWG), 2025

- **Hosted by** – Union Territory of Ladakh and Jammu & Kashmir.
- **Umbrella scheme** – Khelo India Scheme.
- **Teams** – 19, comprising of states & Union Territories.
- **Sports includes**
    - **2 Ice sports** – Ice Hockey & Ice Skating.
    - **4 Snow sports** – Ski Mountaineering, Alpine Skiing, Snowboard & Nordic Skiing.
- It is the *2nd time Ladakh* is hosting the Winter Games, into its *5th edition.*
- It is the *1st time* Ministry of Youth Affairs and Sports along with Sports Authority of India is managing the technical conduct of the games.

Gaurav Samman

6 individuals were honoured with Uttar Pradesh Gaurav Samman on UP Foundation Day.

- It is *one of the highest civilian award* of the States.
- It includes Uttar Pradesh, Haryana, Uttarkhand, Jharkhand and Odisha.
- **Awarded to** – A person for their extraordinary contribution in *any field of human endeavour*.
- **Significance** – Contributions across diverse fields such as entrepreneurship, science and technology, arts and culture, social development and more.

World Audio Visual & Entertainment Summit (WAVES)

- **Nodal Ministry** – Ministry of Information and Broadcasting.
- **WAVES** – It is a dynamic platform that aligns with Prime Minister vision of showcasing and economically empowering India's creative talents.
- It is globally recognized as the *Orange Economy*.
- It enhancing cultural strength, providing a foundation for our creators to earn respect and recognition worldwide.

38th National Games of India, 2025

- **Held in** – Dehradun, Uttarakhand.
- **Theme** – Green Games.
- **Mascot** – Mauli, inspired by Uttarakhand's state bird - Monal.
- **Torch bearer** – Lakshya Sen, a world championships medal-winning shuttler.
- **Games included** – Yoga and Mallakhamb for the 1st time.
- **Medals and certificates** – It will be made from environmentally friendly and biodegradable materials.

International Zebra Day

- It is observed every year on *31 January*.
- It is established to highlight the challenges zebras face in the wild.
- **Highlights** – The challenges zebras face in the wild.
- **Zebra species** – They are *native to Africa*, roam across countries like Kenya, Namibia, and South Africa.
- **Threats** – Habitat loss due to climate change and poaching.
- **3 species & Conservation status**
- Grevy's zebra – Endangered.
- Mountain zebra – Vulnerable.
- Plains zebra – Near-threatened.

World Neglected Tropical Diseases (NTDs) Day 2025

- It is observed annually on *30 January*.
- It is an act to eliminate NTDs by making bold, sustainable investments to free the estimated 1.5 billion people.
- **Theme** – Unite, Act and Eliminate.
- **NTDs** – They are a diverse group of conditions *caused by a variety of pathogens* including viruses, bacteria, parasites, fungi and toxins.

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