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- Meet Hercules, world's most poisonous spider
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ART AND CULTURE

Remote Bengal village began New Year with workshop on ancient indigenous art i.e. Sohrai Painting

- Sohrai Painting is an indigenous mural art form.
- It is also interesting to note that the word 'Sohrai' comes from soro – translating to 'to drive with a stick'.
- This art form dates back to the Meso-chalcolithic period (9000-5000 BC).
- The Isko rock shelter excavated in Barkagaon, Hazaribagh area also has rock paintings that are exactly similar to the traditional Sohrai paintings.
- Theme: It is usually based on natural elements of the universe, this includes forests, rivers, animals amongst others.
- These ancient paintings are made by tribal (Adivasi) women with the use of natural substances like charcoal, clay, or soil.
- The very primitive form of the Sohrai art was in the form of cave paintings.
- It is practiced by indigenous communities, particularly in the States of Jharkhand, Bihar, Odisha, and West Bengal.
- The region of Hazaribagh in Jharkhand that has received the GI tag for this art form.
- It is the art of the women of the Kurmi, Santhal, Munda, Oraon, Agaria, Ghatwal tribes.
- Sohrai paintings are distinctive for their vibrant colours, intricate patterns, and symbolic motifs;
- There is a Sohrai festival held every year, marking the harvesting season and the arrival of winter.

1,500-year-old gold buckles depicting ruler "majestically sitting on a throne" discovered in Kazakhstan

- Archaeologists in Kazakhstan discovered two gold ornaments in a 1,500-year-old tomb that feature the earliest known depictions of the great khan, or "khagan," of the Göktürks.
- The Göktürks were a nomadic confederation of Turkic peoples who lived in ancient Inner Asia and the steppes of Central Asia.
- They emerged into history in the early sixth century AD from obscure tribal origins.
- The Göktürk rulers originated from the Ashina tribe, an Altaic people who lived in the northern corner of the area presently called Xinjiang.
- The Göktürks, under the leadership of Bumin Khan (d. 552) and his sons, succeeded the Xiongnu as the main Turkic power in the region and took hold of the lucrative Silk Road trade during the sixth century.
- Under their leadership, the Göktürks rapidly expanded to rule huge territories in north-western China, North Asia, and Eastern Europe(as far west as the Crimea). At their height, the Gokturks controlled a vast area stretching from Eastern Europe all the way across northern China.
- They were the first Turkic tribe known to use the name "Turk" as a political name.
- Their religion, Tengriism, a form of shamanism centred on a celestial deity, Tengrii, includes elements which resemble concepts of Confucian and Hindu thought.
- From 552 to 745, Göktürk leadership bound the nomadic Turkic tribes together into an empire, which eventually collapsed due to a series of dynastic conflicts.

India's first healthy & hygienic food street 'Prasadam' inaugurated in Ujjain

- Union Minister for Health & Family Welfare recently inaugurated the country's first healthy & hygienic food street, 'Prasadam', at Neelkanth Van, Mahakal Lok, in Ujjain, Madhya Pradesh.
- Prasadam is the country's first "Healthy and Hygienic Food Street".
- It has been opened at Neelkanth Van, Mahakal Lok, in Ujjain, Madhya Pradesh.

- It will connect people in every corner of the country with pure and safe local and traditional food.
- Spread over 939 square metres with 19 shops, Prasadam offers convenient and culturally rich dining options for the 1-1.5 lakh devotees who visit the Mahakaleshwar Temple daily.
- The food street is designed to provide various facilities, including a kids' play area, drinking water facility, CCTV surveillance, parking, public conveniences, and seating spaces.
- **Key Facts about Mahakaleshwar Temple:**
- It is a Hindu temple dedicated to Shiva.

Location:

- It is located in the ancient city of Ujjain, in the state of Madhya Pradesh.
- The temple is situated beside the Rudra Sagar Lake.
- It is one of the twelve Jyotirlingas of Lord Shiva.
- Mahakaleshwar idol is Dakshina Mukhi, facing south, unlike all the other Jyotirlingas.
- The temple, which is spread over five levels, sees a huge throng of devotees during the Maha Shivaratri festival.

Architecture:

- The temple complex comes with a spacious courtyard that is adorned with the finest sculptures that are believed to be influenced by the Chalukya, Maratha, and Bhumija styles of structural design.
- The foundation and platform are built of stones. Most of the upper structure rests on the strong and well-designed pillars and plasters.
- It is complete with impressive lingam sculptures of Mahakaleshwar.
- The images of Ganesh, Parvati, and Kartikeya are installed in the west, north, and east of the sanctum sanctorum.
- The temple also houses a tank constructed in the sarvatobhadra style.

Vice President Jagdeep Dhankhar inaugurates 12th General Assembly of the Asian Buddhist Conference for Peace

- The Indian Vice President recently inaugurated the 12th General Assembly of the Asian Buddhist Conference for Peace in New Delhi.
- Asian Buddhist Conference for Peace (ABCP) was founded in 1970 in Ulaanbaatar, Mongolia, as a voluntary movement of followers of Buddhism with both monastic (monks) and lay members.
- Its aim is to bring together the efforts of Buddhists in support of consolidating universal peace, harmony, and cooperation among people in Asia.
- It is currently headquartered at the Ganden Tegchenling Monastery in Ulaanbaatar, Mongolia, and the Supreme Head of Mongolian Buddhists is the ABCP President.

History:

- The roots of founding of ABCP lay in the Cold War politics of peace movements, and consolidation of allies, and building popular outreach among the masses through various organisations.
- Most Venerable Gabji Samaagiin Gombojav, Khambo Lama of Mongolia, Venerable J. Gomboyev from Buriat, Khambo Lama of the former Soviet Union, Venerable Kushok Bakula Rinpoche from India, and Buddhist leaders from Sri Lanka and Nepal came together and officially founded the Asian Buddhist Conference for Peace (ABCP) in 1970 with a permanent headquarters in Ulaanbaatar.
- It drew active participation from Mongolia, Japan, India, Laos, Vietnam, Cambodia, Bhutan, Russian Far East, Sri Lanka, Thailand, and other regional countries.
- ABCP was registered as an observer to the UN's Economic and Social Council in 1988 in recognition of its contribution to the well-being of humanity.

Remains of 2,800-year-old settlement found in PM Modi's village in Gujarat

- The remains of a 2,800-year-old human settlement have been recently discovered in Gujarat's Vadnagar.
- Vadnagar is a town and municipality in the Mehsana district of North Gujarat.
- As a historical city, it was known by various names, such as Vridhanagar, Anandapur, Anartapur, and Nagar.
- The town represents a continuously evolving historic urban landscape/area that played a major role in the hinterland trade network of Western India.
- It is mentioned often in the Puranas and even in the travelogue of the great Chinese traveller, Hieu-en-Tsang (7th century), as a rich and flourishing town.

Features:

- The ancient town of Vadnagar is an L-shaped town with Sharmishtha Lake located on its northeastern edge.
- The whole ancient town of Vadnagar is built over an ancient mound. The topography of the mound is gently rising, with its highest point in the middle of the settlement, also called Darbar Ghat.
- Vadnagar town is divided into several blocks, also called Mohallas or Madhs. These mohallas are named after a temple, a community, or an occupation.
- The town's fortifications, arched gateways (toranas), temples, wells, residential structures (kothis), and excavated sites like Buddhist monasteries and dedicated stupas showcase the architectural influence of various cultural periods.
- The current residential layer of the town is from the late Gaekwad period (late 18th Century CE).

Who are the shankaracharyas — and who was Adi Shankara?

- The four Shankaracharyas said that they will not attend the inauguration of the Ram temple in Ayodhya.

- Shankaracharya, literally 'teacher of the way of Shankara', is a religious title used by the heads of the four Hindu maths (monasteries) that were established by the eighth-century Hindu saint Adi Shankara.
- Adi Shankara established these maths to impart knowledge. These maths consist of religious shrines, temples, libraries, and residences.
- These maths are located in Dwarka (Gujarat), Joshimath (Uttarakhand), Puri (Odisha), and Sringeri (Karnataka).
- The Shankaracharyas also oversee the Dashanami Sampradaya, an order of renunciates.

Who was Adi Shankaracharya?

- Adi Shankaracharya, or Shankara, as he was known, was an ancient Indian philosopher and theologian who lived in theearly 8th century CE.
- Birth: He was born in Kalady, a village in present-day Kerala.
- Revered as an avatar of Lord Shiva, it is believed that he mastered the Vedas when he was just 16.

Philosophical Contributions:

- At a very young age, Shankara started criss-crossing the length and breadth of India to spread his commentaries on the Brahma Sutras, Upanishads, and the Bhagavad Gita amid a rise in Jainism and Buddhism.
- He is best known for his role in the development and propagation of Advaita Vedanta, a non-dualistic school of Hindu philosophy.
- The fundamental philosophy of Advaita Vedanta lies in the unity of atma (soul), or individual consciousness, and brahma or the ultimate reality.
- According to this philosophy of non-duality, God and humans are not two and the material world is an "illusion".

What is the Nagara style, in which Ayodhya's Ram temple is being built

- The Ram temple in Ayodhya will be inaugurated on January 22. The complex is in the Nagara style of temple architecture, designed by 81-year-old Chandrakant Sompura and his 51-year-old son Ashish.
- Nagara architecture is a classical architecture of temple design in northern India, contrasted with Dravida architecture in southern India.
- Nagara temples have a shikhara (mountain peak) over the garbha griha (sanctum sanctorum), a circumambulatory passage around it, and one or more mandapas (halls).
- Shikhara is a symbolic representation of the cosmic order and the divine presence.
- These modes are scholastic classifications, not rigid categories. There is much variation and innovation within and across these modes.
- There are five modes of shikhara design: Valabhi, Phamsana, Latina, Shekhari, and Bhumija.
    - Valabhi and Phamsana are Early Nagara modes, derived from barrel-roofed wooden structures.
    - Latina is a single, slightly curved tower with four equal sides, dominant for three centuries.
    - Shekhari and Bhumija are composite Latinas with attached sub-spires or miniature spires, creating a complex and ornate appearance.

Rahul Gandhi prevented from visiting Batadrava Than: Significance of this Assam shrine

- Location: Batadrava Than is located in Nagaon district of Assam.
- It is also known as the Bordowa Than, is one of the most sacred sites for Assamese Vaishnavites.

- It is a temple complex at the birthplace of revered Vaishnavite reformer-saint Srimanta Sankardeva.
- Sankardeva founded the first-ever Kirtan Ghar at Bordowa in 1494 AD to practise and preach the neo Vaishnavite faith during the fifteenth century in Assam, and propagated the Ek Saran Naam Dharma.
- **Features**
- It is enclosed by a brick wall and has two entrances.
- The Kirtan Ghar, a capacious prayer house, was initially built by Sankardev using temporary materials.
- Connected to the Kirtan Ghar is the Manikut, a place dedicated to housing sacred texts, scriptures, and manuscripts.
- The campus encompasses diverse structures such as Natghar (Drama hall), Alohighar (Guest room), Sabhaghar (Assembly hall), Rabhaghar (Music room), Hatipukhuri, Aakashi Ganga, Doul mandir (festive temple), and others.
- Additionally, a mini museum is present, showcasing historical articles and artefacts.
- A very big festival "Doul Mahotsava" (Holi) is a yearly attraction for the devotees in Bordowa.
- **Key facts about Sankardeva and his philosophy**
- Sankardeva espoused a society based on equality and fraternity, free from caste differences, orthodox Brahmanical rituals and sacrifices.
- The Ek Saran Naam Dharma focussed on worship in the form of bhakti (devotion) to Lord Krishna, through singing and congregational listening of His name and deeds.
- His teaching focussed on prayer and chanting (naam) instead of idol worship.
- His dharma was based on the four components of deva (god), naam (prayers), bhaktas (devotees), and guru (teacher).

- The Neo-Vaishnavite reformist movement that Sankardeva started is behind the monastic institutions called Thans/Sattras.
- As the saint travelled across Assam, spreading his teachings, these Sattras/Thans were established as centres of religious, social and cultural reforms in the 16th century.
- Today, the Sattras promulgate Sankardeva's unique "worship through art" approach with music (borgeet), dance (sattriya) and theatre (bhauna).

Stones with 11th century 'Grantham', 16th century Tamil inscriptions discovered near Kangayam in Tamil Nadu

- A team of archaeologists recently discovered two stone inscriptions of 'Grantham' and Tamil dating 11th and 16th centuries respectively at Pazhnchervazhi village near Kangayam.
- Grantha is an important historical script that was once used to write Sanskrit throughout South East Asia and greater Tamil Nadu.
- The word Grantha denotes in Sanskrit 'a literary work'. Evidently, the script used for writing the Sanskrit works obtained the same name.
- At one time, it was prevalent throughout South India.
- When the Malayalam language began to freely borrow words as well as the rules of grammar from Sanskrit, this script was adopted for writing that language and was known as Arya Ezhuthu.
- Both Grantha and Tamil scripts appear alike in modern forms. The evolution of both scripts from Brahmi was also more or less similar.
- The development of the Grantha script in Tamil Nadu may be divided into four periods. The archaic and ornamental, the transitional, the mediaeval, and the modern.
- Archaic and ornamental variety is commonly known as Pallava Grantha. Mahendravarman''s Tiruchirapalli rock cut cave and other cave temple

inscriptions, Narasimhan''s Mamallapuram, Kanchi Kailashnath, and Saluvankuppam temple inscriptions, Mutharaiyar''s Senthalai inscriptions are examples of this variety.

- The transitional variety of Grantha inscriptions roughly belong to three centuries between 650 CE and 950 CE. Later Pallavas (Nandivarman''s Kasakudi, Udayendram plates, etc.) and Pandyan Nedunjadaiyan''s Anaimalai inscriptions are examples of this.
- The mediaeval variety dates from about 950 CE to 1250 CE. Inscriptions of the imperial Cholas of Thanjavur are examples of this.
- The modern variety belongs to the later Pandyas and Vijayanagar periods.
- It was popular in Tamil Nadu until the early 20th century.
- After the introduction of printing machines, many Sanskrit books transcribed from palm leaves were printed in Grantha script.
- After Independence, the popularity of Hindi in Deva Nagari script influenced all printing works, and Grantha script went out of vogue.

10th century Kadamba inscription written in Kannada; Sanskrit found in Goa

- An inscription said to be of the 10th century A.D. from the Kadamba period was discovered in the Mahadeva temple at Cacoda in southern Goa.
- Kadamba inscription is written in Kannada and Sanskrit. The inscription opens with an auspicious word be it well (Swasthi Shri).
- It records that when Talara Nevayya was administering the mandala, his son Gundayya having taken a vow to fulfil his father's desire of capturing a gopura of the port of Goa, fought and died after fulfilling his father's wish.
- Very interestingly, the record is composed as a vocal statement on the death of his son from the mouth of a lamenting father.
- It is in the literary style of the Talangre inscription of Jayasimha I of the same period.

- **Key facts about Kadambas of Goa:**
- The Kadambas of Goa were the subordinates of Chalukyas of Kalyani.
- Chalukyan emperor Tailapa II appointed Kadamba Shasthadeva as mahamandaleshwar of Goa for his help in overthrowing the Rashtrakutas.
- Kadamba Shasthadeva conquered the city of Chandavara from the Shilaharas in 960 A.D.
- Later, he conquered the port of Gopakapattana (present day Goa)

DEFENCE AND SPACE

Joint Military Exercise Desert Cyclone between India and UAE begins in Rajasthan

- Exercise 'Desert Cyclone' is the inaugural edition of joint military exercise "Desert Cyclone 2024" between India and the United Arab Emirates (UAE).
- The exercise aims to enhance interoperability by learning & sharing best practices in Urban Operations.
- This exercise is marking a significant milestone in the strategic partnership.

Key facts about India and UAE relations

- India and the UAE established diplomatic relations in 1972 and UAE opened its Embassy in Delhi in 1972 whereas, India opened its Embassy in Abu Dhabi in 1973.
- The first-ever India-UAE Joint Air Forces exercise took place in September 2008 at the Al-Dhafra base in Abu Dhabi.
- India has also been a regular participant at the biennial International Defence Exhibition (IDEX) in Abu Dhabi.

- Earlier this year, two ships of the Indian Navy, INS Visakhapatnam, and INS Trikand participated in bilateral exercise 'Zayed Talwar' with the UAE to enhance interoperability and synergy between the two navies.

ISRO successfully launches PSLV-C58 XPoSat mission

- XPoSat mission is the first dedicated scientific satellite from ISRO to carry out research in space-polarisation measurements of X-ray emission from celestial sources.
- It carries two payloads which are POLIX and XSPECT.
- POLIX: It is an X-ray Polarimeter for astronomical observations in the energy band of 8-30 keV.
- The payload is being developed by Raman Research Institute (RRI), Bangalore in collaboration with U R Rao Satellite Centre (URSC).
- It is expected to observe about 40 bright astronomical sources of different categories during the planned lifetime of XPoSat mission of about 5 years.
- This is the first payload in the medium X-ray energy band dedicated for polarimetry measurements.
- XSPECT: It is an X-ray SPECtroscopy and Timing payload onboard XPoSat, which can provide fast timing and good spectroscopic resolution in soft X-rays.
- It can provide long-term monitoring of spectral state changes in continuum emission, changes in their line flux and profile, simultaneous long term temporal monitoring of soft X-ray emission in the X-ray energy range 0.8-15 keV.
- It would observe several types of sources viz X-ray pulsars, blackhole binaries, low-magnetic field neutron star (NS) in LMXBs, AGNs and Magnetars.
- The launch put India in an elite category as it has become the second (after NASA's Imaging X-ray Polarimetry Explorer (IXPE) launched in 2021) nation to send an observatory to study astronomical sources such as black holes, neutron stars among others.

India, Pakistan exchange list of nuclear installations

- India and Pakistan exchanged the list of nuclear installations and facilities through diplomatic channels recently under the agreement on the Prohibition of Attack against Nuclear installations and facilities.
- Agreement on the Prohibition of Attack against Nuclear Installations and Facilities was signed on December 31, 1988, by the then Pakistani Prime Minister Benazir Bhutto and Indian PM Rajiv Gandhi.
- The treaty came into force on January 27, 1991, and has two copies each in Urdu and Hindi.

Need for the Agreement:

- In 1986, the Indian army carried out a massive exercise 'Brasstacks', raising fears of an attack on nuclear facilities.
- Since then, both countries have been negotiating to reach an understanding towards the control of nuclear weapons, which culminated in the treaty.

Provisions:

- The agreement mandates both countries to inform each other about any nuclear installations and facilities to be covered under the agreement on the first of January of every calendar year, providing a confidence-building security measure environment.
- The term 'nuclear installation or facility' includes nuclear power and research reactors, fuel fabrication, uranium enrichment, iso-topes separation, and reprocessing facilities, as well as any other installations with fresh or irradiated nuclear fuel and materials in any form and establishments storing significant quantities of radioactive materials.

The crucial role of the Kármán Line in space defense strategies

- The Kármán line lacks a specific national demarcation, resembling the concept of international waters.

- Located at 100 km (62 miles) above sea level, it is an imaginary line that demarcates the earth's atmosphere from space.
- It was established in the 1960s by a record-keeping body called the Fédération Aéronautique Internationale (FAI).
- It was named after aerospace pioneer Theodore von Kármán.
- Though not all scientists and spacefarers accept it (for example, the Federal Aviation Administration, NASA, and the U.S. military place the line between outer space and the atmosphere at 80 km (50 miles) above the Earth's surface) , a majority of countries and space organisations recognise this boundary between earthsky and space.
- It is based on physical reality in the sense that it roughly marks the altitude where traditional aircraft can no longer effectively fly.
- Anything traveling above the Kármán line needs a propulsion system that doesn't rely on lift generated by Earth's atmosphere—the air is simply too thin that high up.
- In other words, the Kármán line is where the physical laws governing a craft's ability to fly shift.
- Anyone who crosses this line qualifies as an astronaut.

Why do we need a Kármán line?

- The 1967 Outer Space Treaty says that space should be accessible to all countries and can be freely and scientifically investigated.
- Defining a legal boundary of what and where space can help avoid disputes and keep track of space activities and human space travel.

Indigenous technology used in constructing roads near China border in Arunachal

- The Border Roads Organisation (BRO) has utilised road construction technology i.e. Rejupave technology to build high-altitude bituminous road sections at the

Sela tunnel and LGG-Damteng-Yangste (LDY) road near the India-China border in Arunachal Pradesh.

- Rejupave Technology is developed by India's oldest and premier road research organisation, CSIR-Central Road Research Institute (CSIR-CRRI).
- It is beneficial in constructing high-altitude bituminous roads at low and sub-zero temperature conditions.
- This technology brings down the production and rolling temperature of bituminous mixes by 30 degrees Celsius to 400 degrees Celsius with negligible heat loss in the bituminous mix during transit, despite long haulage time amid snowfall.
- This technology''s asphalt modifier is a bio-oil-based product, which significantly lowers the heating requirement of bituminous mixes besides preserving the bituminous mix temperature during transit.

Significance:

- Rejupave'' asphalt modifier in cold climatic regions will have improved long-term durability and better resistance to thermal cracking under low-temperature conditions.
- It also brings down the greenhouse gas emissions in the pristine eco-sensitive mountainous environment of Arunachal Pradesh.

Key facts about CSIR-Central Road Research Institute (CRRI)

- It is a premier national laboratory established in 1952, a constituent of Council of Scientific and Industrial Research (CSIR).
- The major R&D programmes of CRRI related to the research and development projects on design, construction and maintenance of roads and runways, traffic and transportation planning of mega and medium cities, management of roads in different terrains, improvement of marginal materials, utilisation of industrial waste in road construction and landslide control etc.

- The institute provides technical and consultancy services to various user organisations in India and abroad.
- For capacity building of human resources in the area of highway Engineering to undertake and execute roads and runway project.

High-frequency waves detected in the Martian Upper Atmosphere could help understand plasma processes over Mars

- Scientists have detected the existence of high-frequency plasma waves in the Martian Upper Atmosphere with novel narrowband and broadband features that can help to understand plasma processes in the Martian plasma environment.
- Plasma waves are often observed in the Earth's magnetosphere, a magnetic field cavity around the Earth.
- In general, plasma waves are identified as the short-time scale fluctuations in the electric and magnetic field observations.
- These plasma waves play an important role in the energization and transport of the charged particles in the Earth's magnetosphere.
- Some of the plasma waves like electromagnetic ion cyclotron waves act as a cleaning agent for the Earth's radiation belt, which is hazardous to our satellites.
- Knowing this scenario, researchers are curious to understand the existence of various plasma waves in the vicinity of unmagnetized planets like Mars.
- The planet Mars does not have any intrinsic magnetic field therefore the high-speed solar wind coming from the Sun interacts directly with the Mars atmosphere, like an obstacle in the flow.

Key observations

- Scientists have examined the existence of high-frequency plasma waves in the Martian plasma environment by making use of the high-resolution electric field data from the Mars Atmosphere and Volatile Evolution Mission (MAVEN) spacecraft of NASA.

- These waves could be either electron oscillations that propagate parallel to the background magnetic field (Langmuir waves) or electron oscillations that propagate perpendicular to the background magnetic field (upper-hybrid type waves) in the magneto sheath region of Mars.
- They observed two distinct wave modes with frequency below and above the electron plasma frequency in the Martian magnetosphere.
- These waves are either broadband- or narrowband-type with distinguishable features in the frequency domain.
- The broadband waves were consistently found to have periodic patchy structures with a periodicity of 8–14 milliseconds.

Significance

- Such waves provide a tool to explore how electrons gain or dissipate energy in the Martian plasma environment.

ISRO tests futurist fuel cell system that could power space station

- A fuel cell is a device that generates electricity by a chemical reaction.
- Fuel cells can be used in a wide range of applications, providing power for applications across multiple sectors, including transportation, industrial/commercial/residential buildings, and long-term energy storage for the grid in reversible systems.

Working:

- A fuel cell consists of two electrodes—a negative electrode (or anode) and a positive electrode (or cathode).
- Both electrodes must be immersed in and separated by an electrolyte, which may be a liquid or a solid but must, in either case, conduct ions between the electrodes in order to complete the chemistry of the system.
- A fuel, such as hydrogen, is supplied to the anode, where it is oxidised, producing hydrogen ions and electrons.

- An oxidizer, such as oxygen, is supplied to the cathode, where the hydrogen ions from the anode absorb electrons from the latter and react with the oxygen to produce water.
- The difference between the respective energy levels at the electrodes (electromotive force) is the voltage per unit cell.
- The amount of electric current available to the external circuit depends on the chemical activity and amount of the substances supplied as fuel.
- A single fuel cell generates a tiny amount of direct-current (DC) electricity. In practice, many fuel cells are usually assembled into a stack.

Advantages of Fuel Cells:

- Fuel cells have lower or zero emissions compared to combustion engines. Hydrogen fuel cells emit only water, addressing critical climate challenges as there are no carbon dioxide emissions.
- There are also no air pollutants that create smog and cause health problems during the operation of a fuel cell.
- They are quiet during operation as they have few moving parts.
- They can operate at higher efficiencies than combustion engines.
- A fuel cell resembles a battery in many respects, but it can supply electrical energy over a much longer period of time.
- This is because a fuel cell is continuously supplied with fuel and air (or oxygen) from an external source, whereas a battery contains only a limited amount of fuel material and oxidant that are depleted with use.

Nasa telescope rings in 2024 by capturing two mega star explosions in space

- NASA's Chandra X-ray Observatory recently captured a stunning image of 30 Doradus B, a supernova remnant that is part of a vibrant region of space where stars have been forming for millions of years.

- The team of astronomers studying the remnant discovered that it could not have been formed by a single supernova. Instead, the researchers believe it was created by at least two.

What is a Supernova?

- A supernova is the explosion of a star whose luminosity after an eruption suddenly increases many millions of times its normal level.
- Supernovas are "the largest explosion that takes place in space."
- A star can go supernova in one of two ways:
- Type I supernova: The star accumulates matter from a nearby neighbour until a runaway nuclear reaction ignites.
- Type II supernova: The star runs out of nuclear fuel and collapses under its own gravity.
- Supernovas can briefly outshine entire galaxies and radiate more energy than our sun will in its entire lifetime.
- They're also the primary source of heavy elements in the universe.
- They heat up the interstellar medium, distribute heavy elements throughout the Galaxy, and accelerate cosmic rays.

Key Facts about NASA's Chandra X-ray Observatory:

- It is a telescope specially designed to detect X-ray emission from very hot regions of the Universe, such as exploded stars, clusters of galaxies, and matter around black holes.
- It was launched by NASA on July 23, 1999.
- Because X-rays are absorbed by Earth's atmosphere, Chandra must orbit above it, up to an altitude of 139,000 km (86,500 mi) in space.

UAE announces its participation in Nasa's Lunar Gateway Station

- The UAE announced its participation in developing a module on NASA's Lunar Gateway Station alongside the USA, Japan, Canada, and the European Union.

- Lunar Gateway Station is a primary component of NASA"s Artemis program.
- Artemis intends to establish a long-term base on the Moon (Artemis base), and the Lunar Gateway will serve as a multi-purpose outpost that orbits the Moon.
- The Gateway is a multinational project involving four of the International Space Station partner agencies: NASA, the European Space Agency (ESA), Japan's Aerospace Exploration Agency (JAXA), and the Canadian Space Agency (CSA).
- Basically, the Gateway Station is similar to the International Space Station currently in low Earth orbit, but the Gateway will orbit the Moon.
- Incidentally, the Gateway will be the first space station ever to exist outside of low Earth orbit, or LEO.
- From the Gateway, NASA and international partners can provide essential support for long-term human presence on the lunar surface, as well as launch additional missions for deep space exploration.
- Its flight path is a highly elliptical orbit, bringing it both relatively close to the Moon's surface and also far away, making it easier to pick up astronauts and supplies from Earth, around a five-day trip.
- It will also offer a place to relay communications and act as a base for scientific research.
- The Gateway will weigh around 40 tonnes and consist of a service module, a communications module, a connecting module, an airlock for spacewalks, a place for the astronauts to live, and an operations station to command the Gateway's robotic arm or rovers on the Moon.
- Astronauts will be able to occupy it for up to 90 days at a time, occasionally travelling to the lunar surface to conduct science and test new technologies.

Germany Under Increasing Pressure To Send Taurus Missiles to Ukraine

- Pressure is mounting on the German Chancellor to give the green light for long-range Taurus missiles that would be a significant boost to Kyiv"s weapons arsenal for striking critical Russian assets.

- Taurus KEPD 350, known as the "bunker buster", is a Swedish-Germanlong-range air-to-surface cruise missile.
- The high-precision stand-off guided missile system can penetrate through dense air defence systems and destroy hard and deeply buried stationary and semi-stationary military targets on the ground.
- The missile attacks target bridges, ships in ports, runways, command, control and control centres, bunkers, port facilities, and air base buildings.
- It is in service with the German (Luftwaffe) and Spanish Air Forces.

IDEX- DIO to participate in the upcoming tenth edition of Vibrant Gujarat Global Summit 2024

- Innovations for Defence Excellence- Defence Innovation Organization (iDEX-DIO) is all set to participate in the tenth edition of the Vibrant Gujarat Summit 2024 at Gandhinagar, Gujarat.
- iDEX is the flagship scheme of the Ministry of Defence, Govt of India launched in 2018.
- The objective of the scheme is to cultivate an innovation ecosystem in the Defence and Aerospace sector by collaborating with startups, innovators, MSMEs, incubators, and academia.
- iDEX offers grants and support for R&D with significant potential for future adoption in Indian defence and aerospace.
- It is currently engaged with around 400+ Startups and MSMEs.
- It is recognized as a game-changer in the defence ecosystem, iDEX has received the PM Award for Innovation in the defence sector.
- Funding: It will be funded and managed by a 'Defence Innovation Organization (DIO)' which has been formed as a 'not for profit' company as per the Companies Act 2013 for this purpose, by the two founder memberse. Defence Public Sector Undertakings (DPSUs) - HAL & BEL.

- iDEX will function as the executive arm of DIO, carrying out all the required activities while DIO will provide high level policy guidance to iDEX.

INS Kabra docks in Colombo, move aimed at boosting maritime cooperation

- Indian warship, INS Kabra, an indigenous fast attack craft, docked at the Colombo port in a move aimed at fostering bilateral ties between India and Sri Lanka.
- INS Kabra is a naval vessel named after an island of the Andaman and Nicobar archipelago.
- It belongs to the Car Nicobar class of high-speed offshore patrol vessels built by Garden Reach Shipbuilders and Engineers (GRSE) for the Indian Navy.
- It was the eighth in a series of 10 Fast Attack Crafts.
- The vessels are designed as a cost-effective platform for patrol, anti-piracy and rescue operations in India''s Exclusive Economic Zone.
- The class and its vessels are named after Indian islands. They are the first water jet propelled vessels of the Indian Navy.
- With a top speed of over 35 knots, and excellent manoeuvrability offered by her water-jet propulsion, the ship is ideally suited for high-speed interdiction of fast-moving targets.

DRDO launches indigenous assault rifle "Ugram" for armed forces

- 'Ugram' is a state-of-the-art indigenous assault rifle.
- It has been developed by the Armament Research and Development Establishment (ARDE), a unit of DRDO, in collaboration with a private industry partner.
- It was developed in less than 100 days.
- It has been developed as per the General Staff Qualitative Requirements (GSQR) of the army into consideration.

  Features:

- The rifle will deploy rounds of 7.62 mm calibre, making it more ferocious than rifles that use 5.62 mm calibre rounds, like the INSAS rifle, which is popularly used by the armed forces in India, including paramilitary forces.
- It has an effective range of 500 metres.
- It weighs less than four kilograms.
- The rifle has a 20-round magazine that fires robustly and in full auto mode.

Indian Navy's P8I Aircraft Joins Exercise Sea Dragon-24 in Guam

- Indian Navy's P8I aircraft landed at Guam, a US island territory in Western Pacific, to participate in Exercise Sea Dragon – 24.
- Exercise Sea Dragon-24 is an elite multinational maritime exercise that encourages professional exchanges and teamwork among participating navies.
- Participating countries: India, Japan, South Korea, Australia, and the US.
- The exercise seeks to improve skills in a variety of maritime combat domains through a number of aerial and ground-based tasks, including:
- Anti-submarine warfare (ASW): Locating and neutralising enemy submarines hiding beneath the seas.
- Surface warfare: Coordinated attacks on hostile surface vessels using superior weaponry and tactics.
- Air defence: Putting up an impenetrable air barrier to keep friendly forces safe from aerial threats.
- Search and rescue (SAR): Tracking down and saving maritime personnel in need.
- Communication and coordination: Synchronising activities across several platforms and exchanging information in a seamless manner.

Key facts about the P8I aircraft

- It is a versatile aircraft with potent force multiplier in maritime operations. Some of its primary capabilities are:

- Long-range surveillance: The P8I can scan wide sections of ocean, identifying hostile movements and activities from long distances.
- Multi-sensor fusion: Its electronic intelligence systems, sonars, and onboard radars provide a thorough image of the maritime environment.
- Anti-submarine warfare: With its depth charges and torpedoes, the P8I poses a serious threat to enemy submarines.
- Communication relay: The aircraft can serve as an essential means of communication between various participating fleets'' forces.

Adani Group Unveils India's First Medium Altitude, Long Endurance Drone

- Chief of Naval Staff flagged off the first indigenously manufactured Drishti 10 ''Starliner'' Unmanned Aerial Vehicle (UAV) for the Navy.
- Drishti 10 'Starliner' is an indigenously manufactured Unmanned Aerial Vehicle (UAV).
- It was developed by Adani Defence and Aerospace.
- It is an advanced intelligence, surveillance, and reconnaissance (ISR) platform with 36 hours endurance and a 450 kg payload capacity.
- It is an all-weather military platform which has clearance to fly in both segregated and unsegregated airspace.
- It is designed to possess high endurance, combat-proven capabilities, and advanced features, providing a significant boost to India's naval capabilities.
- The UAV's autonomous nature, coupled with its mission effectiveness and payload configuration options, makes it an invaluable asset for strategic operations.
- One of the distinguishing features of the Drishti 10 'Starliner' is its minimal maintenance requirements, making it cost-effective and operationally efficient.
- This characteristic ensures increased operational readiness, reducing downtime, and maximising deployment opportunities.

- It is equipped with advanced communication systems, including satellite communication and Line-of-Sight (LOS) data links, ensuring reliable and secure data transmission.

Fly your name to the Moon aboard NASA's first robotic lunar rover

- NASA has invited people to send their names to the surface of the Moon aboard the agency's first robotic lunar rover VIPER – short for Volatiles Investigating Polar Exploration Rover.
- The Volatiles Investigating Polar Exploration Rover, or VIPER will get a close-up view of the location and concentration of ice and other resources at the Moon''s South Pole.
- It is NASA''s first mobile robotic mission to the Moon.
- It will directly analyse ice on the surface and subsurface of the Moon at varying depths and temperature conditions within four main soil environments.
- The data VIPER transmits back to Earth will be used to create resource maps, helping scientists determine the location and concentration of ice on the Moon and the forms it's in, such as ice crystals or molecules chemically bound to other materials.
- It navigates across the rugged terrain of the lunar South Pole and gathers valuable data that will help us better understand the history of the Moon and the environment where NASA is planning to send Artemis astronauts.
- Mission duration:100 Earth days, covering 3 cycles of lunar day and night.
- It will land at the South Pole of the Moon in late 2024.

MAIDEN INDIAN NAVY – ROYAL THAI NAVY BILATERAL EXERCISE AND 36TH EDITION OF INDO-THAI COORDINATED PATROL

- The IndIa-Thailand Bilateral Exercise is being named as 'Ex-Ayutthaya', which literally translates to 'The Invincible One' or 'Undefeatable'.

- It symbolises the significance of two of the oldest cities Ayodhya in India and Ayutthaya in Thailand, the historic legacies, rich cultural ties and shared historical narratives dating back to several centuries.
- Indigenously built Indian Naval ships Kulish and IN LCU 56 participated in the inaugural edition of the exercise.
- With the institution of a Bilateral Exercise, both navies have taken a step towards strengthening operational synergy and progressively increasing the exercise complexity.
- During the maiden edition of the exercise, participating units from both navies conducted surface and anti-air exercises including weapon firing, seamanship evolutions and tactical manoeuvres.
- The 36th edition of India-Thailand Coordinated Patrol (Indo-Thai CORPAT) was also conducted along with the maiden bilateral exercise.
- Maritime Patrol Aircraft from both navies participated in the Sea Phase of the exercise.
- As part of Government of India''s vision of SAGAR (Security And Growth for All in the Region), the Indian Navy has been proactively engaging with countries in the Indian Ocean Region towards enhancing regional maritime security.
- The Indian Navy and Royal Thai Navy have maintained a close and friendly relationship which has strengthened over the years.

China's Chang'e 6 sample return mission to Moon to launch in first half of 2024

- The China National Space Administration (CNSA) announced that the Chang'e 6 sample return mission is on track to land on the surface of the Moon in the first half of 2024.
- The Chang''e 6 mission is a planned lander designed to return samples from the lunar south pole.

- The mission aims to land on the Moon, collect samples from the lunar surface, and return them to Earth. This process will contribute crucial data to unravel the Moon''s geological mysteries.
- Representing the first attempt to retrieve samples from the far side of the Moon, Chang''e 6 is set to bring back up to two kilograms of lunar samples, adopting a configuration similar to the successful Chang''e 5 mission.
- The mission involves international collaboration, with payloads from the European Space Agency (ESA) and the French space agency CNES.
- ESA contributes a lunar surface ion tester, while CNES provides equipment for measuring radon gas and its decay products.
- Additionally, an Italian laser corner reflector for radar instrument calibration and Pakistan''s ICUBE-Q CubeSat will be part of the mission.
- Chang''e 6 will consist of both a lander and a rover.
- The lander will touch down on the lunar surface, while the rover will explore specific regions, conduct experiments, and aid in the sample collection process.
- The returned samples will be made available to the global scientific community for study.

ISRO develops second generation Distress Alert Transmitter

- Indian Space Research Organisation (ISRO) has developed an improvised Distress Alert Transmitter (DAT) with advanced capabilities and features for the fishermen at sea to send emergency messages from fishing boats.
- The first version of DAT has been operational since 2010.
- The fishermen at sea send emergency messages from fishing boats.
- The messages are sent through a communication satellite and received at a central control station (INMCC: Indian Mission Control Centre) where the alert signals are decoded for the identity and location of the fishing boat.

- The extracted information is forwarded to Maritime Rescue Coordination Centres (MRCCs) under Indian Coast Guard (ICG).
- Using this information, the MRCC coordinates to undertake Search and Rescue operations to save the fishermen in distress.

What is Second Generation DAT?

- Taking advantage of technological developments in satellite communication and satellite navigation ISRO has improvised DAT with advanced capabilities and features evolving to Second Generation DAT (DAT-SG).
- The DAT-SG has the facility to send back acknowledgement to the fishermen who activate the distress alert from sea. This gives an assurance to him of rescue coming to him.
- Apart from transmitting distress signals from the Sea, DAT-SG has the capability to receive messages from control centres.
- Using this, advance alert messages can be sent to the fishermen at sea whenever there are events of bad weather, cyclone tsunami or any other emergencies.
- Further, the information about Potential Fishing Zones (PFZs) are also transmitted to fishermen using DAT-SG on regular intervals.
- DAT-SG can be connected to mobile phones using Bluetooth interface and the messages can be read in native language using an App in the mobile.
- The central control centre has a web-based network management system called "SAGARMITRA" which maintains a database of registered DAT-SGs and helps MRCCs to access the information about boat, coordinate the boat in distress in real time.
- This helps the Indian Coast Guard to undertake Search & Rescue operations at the time of distress, without any time delay.

Japan becomes 5th country to land on the Moon

- Japan landed a spacecraft called SLIM (Smart Lander for Investigating Moon) on the lunar surface, becoming the 5th country after the Soviet Union, the US, China and India to achieve a soft landing on the moon.
- SLIM was launched by the Japan Aerospace Exploration Agency (JAXA) in September 2023 aboard the H-IIA rocket from the Tanegashima spaceport.
- It aims to demonstrate precision landing within 100 metres through new technologies.
- It also carried two mini robotic rovers developed by Sony and Tomy for reconnaissance.
- The mission aims to revitalise Japan's space program which suffered setbacks like the failure of the flagship H3 rocket in March 2023.

Objectives:

- The mission aims to observe X-rays coming from deep space and to identify their wavelengths with unprecedented precision.
- It will use state-of-the-art spectroscopy to measure changes in the brightness of celestial objects at different wavelengths.
- It detects X-rays with energies ranging from 400 to 12,000 electron volts. (For comparison, the energy of visible light is 2 to 3 electron volts.)
- This range will provide astrophysicists with new information about some of the universe''s hottest regions, largest structures, and objects with the strongest gravity.

Future Moon Missions:

- ISRO (India): LUPEX with JAXA, Chandrayaan-4
- NASA (USA): Lunar Trailblazer Mission, Viper Rover, Artemis 2-6 (Manned mission).
- ROSCOSMOS (Russia): LUNA 26-28, ORYOL
- CNSA (China): Chang''e 6-8
- JAXA (Japan): Destiny+

NASA Re-Establishes Contact With Ingenuity Helicopter On Mars After Outage

- Ingenuity Mars Helicopter is a small, autonomous aircraft that flew to Mars aboard NASA's Perseverance rover.
- It was sent to Mars to perform experimental flight tests to determine if powered, controlled flight at the Red Planet was possible.
- Ingenuity's mission is experimental in nature and completely independent of the rover's science mission.
- Ingenuity was deployed to the surface on April 4, 2021.
- On April 19, it became the first aircraft in history to make a powered, controlled flight on another planet.
- It rose to a height of 10 feet, hovered for 30 seconds, and then descended back to the ground.
- The flight lasted 39.1 seconds.
- It managed to fly in Mars' thin atmosphere, which isn't conducive for flying.
- It's piloted by onboard guidance, navigation, and control systems running algorithms.
- Perseverance acts as a relay between the chopper and the earth.

Key Facts about Perseverance Rover:

- It is a robotic explorer to land on Marsas part of NASA's ongoing Mars 2020 Mission.
- Main Job:Seek signs of ancient life and collect samples of rock and regolith (broken rock and soil) for possible return to Earth.
- The rover will collect samples of rock and soil, encase them in tubes, and leave them on the planet''s surface to be returned to Earth at a future date.
- Launch: It was launched on July 30, 2020,from Cape Canaveral, Florida.
- Landing: Successfully landed on the surface of Mars''s Jezero Crater on February 18, 2021.

INDIAN – KYRGYZSTAN JOINT SPECIAL FORCES EXERCISE KHANJAR COMMENCES IN HIMACHAL PRADESH

- Exercise Khanjar was first initiated in December 2011, in Nahan, India.
- It is the 11th edition of India-Kyrgyzstan Joint Special Forces Exercise.
- It is an annual event conducted alternately in both the countries.
- The Indian Army contingent comprising 20 personnel is being represented by troops from The Parachute Regiment (Special Forces) and the Kyrgyzstan contingent comprising 20 personnel is represented by Scorpion Brigade.
- Aim of the exercise is to exchange experiences and best practices in Counter Terrorism and Special Forces Operations in Built-up Area and Mountainous Terrain under Chapter VII of United Nations Charter.
- The exercise will emphasise on developing Special Forces skills, advanced techniques of insertion and extraction.
- The exercise will provide an opportunity for both the sides of fortify defence ties while addressing common concerns of international terrorism and extremism.
- The exercise will also accord opportunity to showcase capabilities of cutting edge indigenous defence equipment besides achieving shared security objectives and foster bilateral relations.

Key tests completed on Insat-3DS, launch soon

- Indian Space Research Organisation has completed all key tests on Insat-3DS satellite before the final review which will be followed by its shipping to the spaceport in Srihari Kota, Andhra Pradesh.
- Insat-3DS is a collaborative effort between ISRO and the India Meteorological Organisation (IMD).

- It is part of a series of climate observatory satellites aimed at enhancing climate services. Comprising three dedicated Earth observation satellites, including INSAT-3D and INSAT-3DR already in orbit.
- It will be launched by using the Geosynchronous Launch Vehicle (GSLV-F14).

What is GSLV-F14?

- It is a more advanced rocket utilising liquid propellant.
- The rocket, distinguished by its higher capacity and the use of cryogenic liquid propellants in all three stages, presents a more complex engineering challenge but allows for a substantially higher lift-off weight capacity.

Key facts about INSAT-3DR

- It is an advanced meteorological satellite of India configured with an imaging System and an Atmospheric Sounder.
- The significant improvements incorporated in INSAT-3DR are:Imaging in Middle Infrared band to provide night time pictures of low clouds and fog. Imaging in two Thermal Infrared bands for estimation of Sea Surface Temperature (SST) with better accuracy.Higher Spatial Resolution in the Visible and Thermal Infrared bands
- Payloads: INSAT-3DR carries a multi spectral Imager, 19 channel Sounder, Data Relay Transponder and Search and Rescue Transponder.

INDIA- SAUDI ARABIA JOINT MILITARY EXERCISE 'SADA TANSEEQ' COMMENCES IN RAJASTHAN

- In a major boost of ties, the militaries of India and Saudi Arabia are conducting their first Joint Military Exercise named as Sada Tanseeq.
- Exercise Sada Tanseeq is the inaugural edition of India-Saudi Arabia Joint Military Exercise 'SADA TANSEEQ' commenced at Mahajan, Rajasthan.
- The Exercise is scheduled to be conducted from 29th January to 10th February 2024.

- Aim of the Exercise is to train troops of both sides for Joint Operations in Semi Desert terrain under Chapter VII of the United Nations Charter.
- The Exercise will enable both the sides to share their best practices in the tactics, techniques and procedures of conducting operations in sub-conventional domains.
- It will facilitate developing interoperability, bonhomie and camaraderie between troops from both the sides.
- The Exercise will involve Establishment of Mobile Vehicle Check Post, Cordon & Search Operation, House Intervention Drill, Reflex Shooting, Slithering and Sniper Firing.
- The Exercise will provide an opportunity to both the contingents to strengthen their bond.

Mahindra Armado Military Vehicle Makes Its Debut At Republic Day Parade

- Armado is India's first Armoured Light Specialist Vehicle (ALSV).
- It is a fully indigenous vehicle designed and built by the Mahindra Defence Systems (MDS) for the Indian armed forces.
- It can be used in counter-terrorist and special forces operations. It can also be used by quick reaction teams, as a reconnaissance vehicle and for patrolling the borders.

Features:

- It has a seating capacity of six passengers, including the driver, and can be configured to seat up to eight.
- Above the standard 1,000 kg load capacity, the ASLV can carry another 400 kg.
- It gets ballistic protection up to the B7 level and STANAG level-2. This means that its armour offers protection against armour-piercing rifles.
- Also, the ASLV gets protection on all sides(front, side and rear) from ballistics and explosives.

- Powering the 4-wheeler is a 3.2-litre multi-fuel diesel engine that generates 216 hp of maximum power.
- Armado takes just 12 seconds to accelerate from 0 to 60 kmph, and runs at a speed of more than 120 kmph.
- It also gets a self-cleaning-type exhaust scavenging and air filtration system for extreme dusty climate, like deserts.

India to export BrahMos supersonic missile systems to Philippines in next 10 days

- BrahMos is a supersonic cruise missile that can be launched from land, sea, and air.
- It has been developed by Brahmos Aerospace, a joint venture of India and Russia.
- It is named after the rivers Brahmaputra (India) and Moskva (Russia).

Features:

- It is a two-stage missile with a solid propellant booster engine as its first stage, which brings it to supersonic speed and then gets separated. The liquid ramjet, or second stage then takes the missile closer to 3 Mach speed in the cruise phase.
- It is one of the fastest cruise missiles currently operationally deployed, with a speed of Mach 2.8, which is nearly three times more than the speed of sound.
- It has a launch weight of 2,200-3,000 kg.
- The extended-range variant of the missile can strike land and sea targets at a maximum range of 400 to 500 kilometers with supersonic speed all throughout the flight.
- It operates on the "Fire and Forgets" principle, adopting varieties of flights on its way to the target.
- Its cruising altitude could be up to 15 km, and its terminal altitude is as low as 10 meters.
- It carries a conventional warhead weighing 200 to 300 kg.

- It is equipped with stealth technology designed to make it less visible to radar and other detection methods.
- It has an inertial navigation system (INS) for use against ship targets, and an INS/Global Positioning System for use against land targets.

ECONOMICS

Eurozone set for weak growth next year

- The eurozone economy is set for only modest growth next year, despite wages rising faster than inflation for the first time in three years, according to a recent poll of economists.
- The eurozone, officially known as the euro area, is a geographic and economic region that consists of all the European Union countries that have fully incorporated the euro as their national currency.
- As of January 2023, the eurozone consists of 20 countries in the European Union (EU):
- Austria, Belgium, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain.
- Not all European Union nations participate in the eurozone; some opt to use their own currency and maintain their financial independence.
- The European Central Bank (ECB)exercises the sole power to set the monetary policy for the Eurozone countries.
- The ECB exercises the sole authority to decide the printing and minting of euro notes and coins. It also decides the interest rate for the Eurozone.
- The ECBs is headed by a president and a board, comprising the heads of the central banks of the participating nations.

How do countries join Eurozone?

- In order to join the euro area, EU member states are required to fulfil so-called "convergence criteria" which consists of price stability, sound public finances, the durability of convergence, and exchange rate stability.
- These binding economic and legal conditions were agreed upon in the Maastricht Treaty in 1992 and are also known as "Maastricht criteria".
- All EU Member States, except Denmark, are required to adopt the euro and join the euro area once they are ready to fulfill them.
- The Treaty does not specify a particular timetable for joining the euro area but leaves it to member states to develop their own strategies for meeting the condition for euro adoption.
- The European Commission and the ECB jointly decide whether the conditions are met for euro area candidate countries to adopt the euro.

What is European Union (EU)?

- The EU is a political and economic union of 27 member states located primarily in Europe.
- The EU was established by the Maastricht Treaty, which entered into force on November 1, 1993.
- The main goal of the EU is to promote cooperation and integration among its member states in order to enhance economic and political stability in Europe.
- It has a single market where goods, services, and capital can move freely.

RBI gives clarity to "politically exposed persons" term to meet FATF norms

- The Reserve Bank of India (RBI) updated Know Your Customer (KYC) norms for politically exposed persons (PEPs) who transact with regulated entities (REs), seeking to comply with the recommendations of the Financial Action Task Force (FATF).
- Who are PEPs? In the amended KYC master direction, the central bank defines PEPs as "individuals who are or have been entrusted with prominent public

functions by a foreign country, including the heads of states/governments, senior politicians, senior government or judicial or military officers, senior executives of state-owned corporations, and important political party officials".

- REs have the option of establishing a relationship with PEPs (whether as customers or beneficial owners).
- REs have to perform regular customer due diligence and also follow additional conditions prescribed by the RBI to transact with PEPs.
- Some additional conditions include establishing an appropriate risk management system to determine whether the customer or the beneficial owner is a PEP.
- REs have to take reasonable measures to establish the source of funds/ wealth.
- They also need to get approval from senior management to open an account for a PEP.

Key Facts about Financial Action Task Force (FATF):

- FATF is an inter-governmental policy-making and standard-setting body dedicated to combating money laundering and terrorist financing.
- It was established in 1989 during the G7 Summitin Paris to develop policies against money laundering.
- In 2001 its mandate expanded to include terrorism financing.
- Headquarters: Paris, France.
- FATF members include 39 countries, including the United States, India, China, Saudi Arabia, Britain, Germany, France, and the EU as such.
- India became a member of FATF in 2010.
- What are FATF "grey list" and "blacklist"?
- FATF has 2 types of lists:
- Black List: Countries known as Non-Cooperative Countries or Territories (NCCTs) are put on the blacklist. These countries support terror funding and money laundering

- Grey List: Countries that are considered a safe haven for supporting terror funding and money laundering are put on the FATF grey list. This inclusion serves as a warning to the country that it may enter the blacklist.
- Three countries North Korea, Iran, and Myanmar are currently on FATF's blacklist.
- Consequences of being on the FATF blacklist:
- No financial aid is given to them by the International Monetary Fund (IMF), the World Bank, the Asian Development Bank (ADB), and the European Union (EU).
- They also face a number of international economic and financial restrictions and sanctions.

PPFAS Mutual Fund applies for dynamic asset allocation scheme with SEBI

- Asset management company (AMC) PPFAS Mutual Fund filed for an open-ended dynamic asset allocation scheme with the capital market regulator, the Securities and Exchange Board of India (SEBI).
- Dynamic Asset Allocation (DAA) is an investment strategy that involves the frequent adjustment of the weights in a portfolio based on the overall market performance or the performance of certain securities.
- Most of the funds in this category are invested and spread across various sectors, including equity funds, real estate, stocks, and bonds.
- Under the dynamic allocation strategy, a portfolio manager assesses the current market conditions and the performance of each asset class.
- He uses the results of the assessment to reduce the weights of assets with bad performance and increase the weights of assets with strong performance.
- Generally, a dynamic strategy is used in reaction to existing risks and market downturns.

- Unlike the strategic asset allocation strategy, dynamic asset allocation does not involve a target mix of assets. Thus, portfolio managers enjoy a high degree of flexibility in their choice of investments.
- Dynamic allocation requires active portfolio management. Therefore, the success of the strategy depends not only on the market conditions but also on the portfolio manager's ability to make good investment decisions and to adequately respond to changes in the market.

Dynamic Asset Allocation Example:

- Suppose global equities enter a six-month bear market.
- An investment manager using dynamic asset allocation may decide to reduce a portfolio's equity holdings and increase its fixed-interest assets to reduce risk.
- For example, if the portfolio was initially equities heavy, the manager may sell some of its equity holdings and purchase bonds.
- If economic conditions improve, the manager may increase the portfolio's equity allocation to take advantage of a more bullish outlook for stocks.

Advantages:

- Returns: The frequent adjustments in the mix of assets can possibly provide higher returns on the investment portfolio.
- Adjustment to market changes: Unlike static asset allocation, dynamic allocation is highly flexible. The strategy can quickly respond to market changes and market risks.

Disadvantages:

- Transaction costs: The frequent rebalancing the weights within the portfolio is associated with transaction costs.
- Active management: It requires tight control of the investment portfolio and constant observation of emerging market trends. Therefore, the asset allocation strategy requires the skills and knowledge of a professional portfolio manager and may often demand extensive sources (e.g., employees for research).

REC sets ₹1 lakh crore sanction target for infrastructure space including roads

- REC Ltd. announced its ambitious plan to increase its financial sanctioning in the infrastructure space, including roads and highways, to ₹1 lakh crore in the current financial year.
- REC Limited (formerly Rural Electrification Corporation Limited) is a Central Public Sector Undertaking under the Ministry of Power involved in financing projects in the complete power sector value chain from generation to distribution.
- It is registered with the RBI as a Non-Banking Finance Company (NBFC), a Public Financial Institution (PFI) and an Infrastructure Financing Company (IFC).
- History:It was incorporated in 1969, in the backdrop of severe drought and famine in the country, to energise agricultural pump-sets for irrigation purposes, thereby reducing the dependency of agriculture on monsoons.
- REC has evolved and expanded its financing mandate to cover the entire Power-Infrastructure sector, comprising Generation, Transmission, Distribution, Renewable Energy and new technologies like Electric Vehicles, Battery Storage, Green Hydrogen etc.
- More recently REC has also diversified into the Non-Power Infrastructure sector comprising Roads & Expressways, Metro Rail, Airports, IT Communication, Social and Commercial Infrastructure (Educational Institution, Hospitals), Ports and Electro-Mechanical (E&M) works in respect of various other sectors like Steel, Refinery, etc.
- Financing: REC provides long-term loans and other financing products to State, Centre, and Private Companies for creation of infrastructure assets in the country.
- REC funds its business with market borrowings of various maturities, including bonds and term loans, apart from foreign borrowings.

- ECPDCL (REC Power Development and Consultancy Limited), the wholly owned subsidiary of REC, provides a range of value-added consultancy services in the power sector.

The logic behind momentum investing

- Many academic studies have shown that momentum investing can generate high returns that comfortably beat the benchmark indices.
- Momentum investing refers to a style of investing wherein investors purchase assets such as stocks or bonds that are consistently rising in price while selling assets whose prices are falling.
- Momentum investors buy assets with rising prices in the hope that the upward price momentum of these assets would continue, thus allowing them to sell these assets at higher prices in the future to make profits.
- It is based on the philosophy that there can be discernible trends in asset prices and that these trends tend to persist over time.
- The persistence of such trends gives investors an opportunity to recognise and participate in them early enough to make significant profits from their investments.
- Similarly, they sell assets that are falling in price expecting the fall in prices to continue for some time.
- Momentum investors generally do not conduct a deep analysis of the fundamental or intrinsic value of the assets in which they invest their money.
- They invest purely based on whether the price of an asset is showing a strong trend, either upward or downward, that they can ride on.
- The "buy high, sell higher" philosophy of momentum investing is in stark contrast to the traditional "buy low, sell high" advice given to investors.

Govt's ZED scheme for MSMEs hits 1 lakh certification milestone

- Zero Defect Zero Effect (ZED) scheme by the MSME Ministry has achieved the 1 lakh certification milestone.
- Launched in October 2016 and revamped in April 2022, the ZED scheme offers certification for environmentally conscious manufacturing under three certification levels (gold, silver, and bronze) classified according to 20 performance-based parameters such as quality management, timely delivery, process control, waste management, etc.
- The major objectives of the ZED Scheme are:
- To create proper awareness in MSMEs about ZED manufacturing and motivate them for the assessment of their enterprise for a ZED rating.
- To drive manufacturing with the adoption of Zero-Defect production processes without impacting the environment (Zero Effect).
- To encourage MSMEs to constantly upgrade their quality standards in products and processes.
- To support the "Make in India" campaign.
- Currently, the scheme is applicable for manufacturing MSMEs only.
- MSME Sustainable (ZED) Certification can be attained in three levels after registering and taking the ZED Pledge:
- Certification Level 1: BRONZE
- Certification Level 2: SILVER
- Certification Level 3: GOLD

Budget 2024-25: Telecom industry wants govt to junk USOF, slash duties

- Telecom service providers have urged the Ministry of Finance to suspend the universal service obligation fund (USOF) levy until the existing corpus is exhausted.
- USOF was set up by an Act of Parliament in December 2003 by amending the Indian Telegraph Act, 1885.

- The objective of the USOF is to provide access to telecom services in a non-discriminatory manner to people in rural and remote areas at affordable and reasonable prices, thereby bridging the rural-urban digital divide.
- For commercially non-viable rural and remote areas, USOF provides subsidy support in the form of Net Cost or Viability Gap Funding (VGF) to incentivize telecom service providers for the expansion of telecommunications and broadband services in those areas.

Funding Mechanism:

- The USOF is funded through a levy on the revenue earned by telecom operators.
- The government imposes a Universal Service Levy (USL) on the gross revenue of the telecom companies, which is a percentage of their Adjusted Gross Revenue (AGR).
- This levy is collected and deposited into the USOF.

Administration:

- USOF is headed by the Administrator, USO Fund who is appointed by the Central Government, for the administration of the fund.
- It is an attached office of the Department of Telecommunications (DoT), Ministry of Communications.

What is the Telecom Technology Development Fund (TTDF)?

- USOF officially launched the TTDF Scheme on October 1st, 2022.
- The TTDF Scheme is aimed at domestic companies and institutions involved in technology design, development, and commercialization of telecommunication products and solutions to enable affordable broadband and mobile services in rural and remote areas.
- This initiative helps to connect schools with varied volunteers from the Indian Diaspora, namely, young professionals, retired teachers, retired Government officials, retired professionals, NGOs, Private Sector and Public Sector Companies, Corporate Institutions, and many others.

- Under the scheme, USOF is also targeting to develop standards to meet countrywide requirements and create an ecosystem for research, design, prototyping, use cases, pilots, and proof-of-concept testing, among others.
- The scheme entails grants to Indian entities to encourage and induct indigenous technologies tailor-made to meet domestic needs.

Are SFIO Officers Police Officers Under Code Of Criminal Procedure? Supreme Court Leaves Question Of Law Open

- The Supreme Court, while dismissing a petition for quashing a complaint filed by the Serious Fraud Investigation Office (SFIO), has left a crucial question of law open i.e., whether SFIO are police officer(s) under the Code of Criminal Procedure, 1973.
- Serious Fraud Investigation Office (SFIO) is a corporate fraud investigating agency set up by the Government of India.
- The SFIO was established on 21st July, 2015,and operates under the Ministry of Corporate Affairs.
- Section 211 of the Companies Act, 2013, accorded a statutory status to the SFIO.
- Objective: The core objective of the SFIO is to be an investigative and law enforcement agency to detect and prosecute or recommend to prosecute white-collar frauds or crimes.
- Headquarters: The headquarters of SFIO is in New Delhi, with five regional offices in Mumbai, New Delhi, Chennai, Hyderabad, and Kolkata.
- SFIO can also take up cases on its own only when decided by the Director of the SFIO, and also give the reasons for taking up the case in writing.
- Upon assignment of a case to the SFIO, no other investigative agency can proceed with an investigation for any offence under the Act.
- Types of Investigations: SFIO will usually take up the following types of cases sent by the Central Government:

- Complex cases needing investigation across multi-discipline and inter-departmental affairs.
- Cases with a huge monetary impact on the public.
- Cases where investigation can lead to the cleaning up of systems and the implementation of changes in laws and procedures.
- Serious fraud cases sent by the Department of Company Affairs.
- The Central Government can ask the SFIO to investigate a company in the following cases:
- When it receives a report from the Registrar or Inspector under Section 208 of the Companies Act 2013.
- When the company itself passes a special resolution and requests an investigation.
- Where there is a huge monetary impact on the public or for other large-scale public interest cases.
- When any Central Government or State Government department makes a request for an investigation.

Nirmala Sitharaman takes part in 'Halwa Ceremony' ahead of interim budget

- The Union Finance Minister participated in the "Halwa Ceremony", a tradition observed before the annual budget presentation.
- Halwa Ceremony is a tradition performed every year ahead of the budget and signifies the official initiation of the printing process of various documents related to the budget.
- It involves the preparation of the traditional dessert "halwa" in a massive kadhai (wok), which is then served to all those who are directly associated with the budget-making process.
- The finance minister gives the go-ahead by stirring the kadhai and serving the sweet to officials.

- It takes place in the basement of the Finance Ministry's North Block in Central Delhi, where a special printing press is located.
- It serves as a formal 'send-off' for the ministry officials and staff engaged in preparing the Union government's annual financial statement.
- Subsequently, the top officials involved with the budget enter a designated 'lock-in' period, isolating themselves within the ministry premises and cutting off from their families to preserve the confidentiality surrounding the final budget document.
- The officials are required to stay in the Finance Ministry till the finance minister finally presents the budget.

NFRA to inspect Big 4, others in 2024 too

- The National Financial Reporting Authority (NFRA) is going to inspect the Big Four audit firms as well as other top auditors of large listed entities in 2024.
- National Financial Reporting Authority (NFRA) is a statutory body constituted under Section 132 of the Companies Act, 2013.
- It was established as an independent authority to regulate the auditing profession and accounting standards in India.
- Its goal is to enhance the country's financial statement quality and consistency and to guarantee that businesses and financial institutions report accurate and fair information.

Composition:

- The Companies Act requires the NFRA to have a chairperson who will be appointed by the Central Government and a maximum of 15 members.
- The appointment of such chairperson and members are subject to the following qualifications:
- They should be having an expertise in accountancy, auditing, finance, or law.

- They are required to make a declaration to the Central Government that there is no conflict of interest or lack of independence in their appointment.
- All the members, including the chairperson, who are in full-time employment, should not be associated with any audit firm (including related consultancy firms) during their term of office and 2 years after their term.

The NFRA has the following responsibilities:

- Make recommendations on the foundation and laying down of accounting and auditing policies and standards;
- Monitor and enforce the compliance of the accounting standards and auditing standards:
- Oversee the quality of service of the professionals (such as auditors, CFOs, etc.) and suggest measures required for improvement in the quality of service;
- Perform other functions related to the above.

Powers:

- NFRA has the power to investigate, either suo moto or on a referencemade to it by the Central Government, into the matters of professional or other misconduct committed by any member or firm of chartered accountants registered under the Chartered Accountants Act, 1949.
- It has the same powers as are vested in a civil courtunder the Code of Civil Procedure, 1908, while trying a suit.
- Where professional or other misconduct is proved, it shall have the power to impose punishment.
- Any person who is not satisfied with the order of the NFRA can then make an appeal to the Appellate Authority.

Jurisdiction of NFRA:

- The jurisdiction of the NFRA for the investigation of Chartered Accountants and their firms would extend to listed companies and large unlisted public companies, the thresholds for which shall be prescribed in the Rules.

- The Central Government can also refer such other entities for investigation where public interest would be involved.
- Head Office: New Delhi

Burkina, Mali, Niger quit West African bloc ECOWAS

- The military regimes in Burkina Faso, Mali and Niger announced their immediate withdrawal from the West African bloc ECOWAS.
- Economic Community of West African States is also known as CEDEAO in French.
- It is the regional group which was established in 1975 through the Lagos Treaty.
- Mandate: Promoting economic integration among its members.
- The vision of ECOWAS is the creation of a "borderless region" that is well-integrated and governed in accordance with the principles of democracy, rule of law and good governance.
- Members: Benin, Cape Verde, Côte d' Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, Senegal and Togo.
- ECOWAS' larger aims are to have a single common currency and create a single, large trading bloc in areas of industry, transport, telecommunications, energy, financial issues, and social and cultural matters.
- Along with the goals of economic cooperation, it has attempted to quell military conflicts in the region.
- It also operated a regional peacekeeping operation known as ECOMOG, led by Nigeria in the 1990s and early 2000s.
- Headquarters: Abuja, Nigeria.

Interim Budget 2024: Exporters seek higher allocation for MAI scheme

- Ahead of the interim Budget 2024, exporters have urged the government to allocate funds worth $3.88 billion for the Market Access Initiative (MAI) scheme.

- Market Access Initiative (MAI) Scheme is an export promotion scheme envisaged to act as a catalyst to promote India's exports on a sustained basis.
- The scheme is formulated on focus product-focus country approach to evolve specific markets and specific products through market studies and surveys.
- Assistance would be provided to Export Promotion Organizations/Trade Promotion Organizations/National Level Institutions/ Research Institutions/Universities/Laboratories, Exporters etc., for the enhancement of exports through accessing new markets or through increasing their share in the existing markets.
- Under the Scheme, the level of assistance for each eligible activities has been fixed.
- The funding for each project will be on cost-sharing basis with the sharing pattern ranging from 65% to 50% at the minimum.
- It is administered by the Ministry of Commerce and Industry, Government of India, through the Directorate General of Foreign Trade (DGFT).

The following activities will be eligible for financial assistance under the Scheme:

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

Eligible Agencies:

- Departments of Central Government and Organisation of Central/State Governments including
- Indian Missions abroad

- Export Promotion Councils
- Registered trade promotion Organisation
- Commodity Boards
- Apex Trade Bodies recognized under Foreign Trade Policy of Govt of India
- Recognized Industrial & Artisan Clusters
- Individual Exporters (only for statutory compliance etc.)
- National Level Institutions (e.g. Indian Institutes of Technology (IITs), Indian Institutes of Management (IIMs), National Institute of design (NIDs), NIFT etc.)/ Research Institutions/Universities/ Recognized laboratories, etc.

FM Sitharaman rejects K-shaped recovery theory for India, asks doubters to explain

- The Finance Minister rejected the theory that India''s ongoing recovery is ''K-shaped''.
- A K-shaped recovery occurs when, following a recession, different parts of the economy recover at different rates, times, or magnitudes.
- It leads to changes in the structure of the economy or the broader society as economic outcomes and relations are fundamentally changed before and after the recession.
- This type of recovery is called K-shaped because the paths of different parts of the economy, when charted together, may diverge, resembling the two arms of the Roman letter "K."
- The portion of the economy that recovers quickly is represented by the upper part of the K, while the lower part represents those groups that recover more slowly.

Reasons:

- K-shaped recoveries are generally caused by disparities that existed before the recession or by a recession that impacts populations and groups differently.

- It is possible due to the creative destruction of old industries due to the development of new industries and technologies during the recession.
- Government strategies like monetary and fiscal policies used to combat the recession can lead to a K-shaped recovery. Due to the nature of the economic policies, certain industries will benefit more than others.
- Due to the nature of the recession, it can exert a unique impact on different parts of the economy, especially when a recession is coupled with a negative real economic shock that results in a lasting negative impact on certain parts of the economy.
- Example: During the COVID-19 pandemic, North America saw a K-shaped recovery where the richer individuals and industries recovered faster compared to the poor.

PM Cares Fund: Delhi High Court Sets Aside CIC Order Directing IT Department To Disclose Details Of Tax Exemption Under RTI

- The Delhi High Court recently set aside an order of the Central Information Commission (CIC) directing the Income Tax (IT) department to provide details regarding the tax exemption granted to the PM Cares Fund under the Right to Information Act, 2005.
- PM CARES Fund was created on March 28, 2020, following the COVID-19 pandemic in India.
- It was set up to have a dedicated national fund to deal with any emergency and provide relief to the distressed.

Fund Constitution:

- It has been registered as a Public Charitable Trust.
- The Prime Minister is the ex-officio Chairman of the PM CARES Fund, and the Minister of Defence, Minister of Home Affairs, and Minister of Finance of the Government of India are ex-officio Trustees of the Fund.

- The Chairperson of the Board of Trustees (Prime Minister) shall have the power to nominate three trustees to the Board of Trustees who shall be eminent persons in the fields of research, health, science, social work, law, public administration, and philanthropy.
- Any person appointed a Trustee shall act in a pro bono capacity.

Objectives:

- To undertake and support relief or assistance of any kind relating to a public health emergency or any other kind of emergency, calamity, or distress, either man-made or natural, including the creation or upgradation of healthcare or pharmaceutical facilities, other necessary infrastructure, funding relevant research, or any other type of support.
- To render financial assistance, provide grants of payments of money, or take such other steps as may be deemed necessary by the Board of Trustees for the affected population.
- To undertake any other activity which is not inconsistent with the above objectives.

Fund Finance:

- The fund consists entirely of voluntary contributions from individuals/organisations and does not receive any budgetary support.
- Donations to PM CARES Fund would qualify for 80G benefits for 100% exemption under the Income Tax Act, 1961.
- Donations to the PM CARES Fund will also qualify to be counted as Corporate Social Responsibility (CSR) expenditure under the Companies Act, 2013
- PM CARES Fund has also got an exemption under the Foreign Contribution Regulation Act(FCRA), and a separate account for receiving foreign donations has been opened.
- This enables the CARES Fund to accept donations and contributions from individuals and organisations based in foreign countries.

DRI seizes alloy containing 16.67 kg gold and 39.73 kg silver worth over Rs. 10 crore, at FPO Delhi in Operation Black Gold

- The Directorate of Revenue Intelligence (DRI) officers developed an intelligence and intercepted seven consignments which had arrived from Hong Kong at the Foreign Post Office in New Delhi.
- Directorate of Revenue Intelligence (DRI) is the premier intelligence and enforcement agency of the Government of India on anti-smuggling matters.
- It works under the Central Board of Indirect Taxes and Customs, Ministry of Finance, Government of India.
- It came into existence on December 4, 1957.

Functions:

- Collection of intelligence about smuggling of contraband goods, narcotics, under-invoicing, etc. through sources in India and abroad, including secret sources.
- Analysis and dissemination of such intelligence to the field formations for action and working on such intelligence, where necessary.
- Keeping watch over important seizures and investigation cases. Associating with or taking over the investigations which warrant specialised handling by the Directorate.
- Guiding important investigation/prosecution cases. Keeping liaison with foreign countries, Indian Missions, and Enforcement agencies abroad on anti-smuggling matters.
- To keep in liaison with C.B.I. and through them with the To refer cases registered under the Customs Act to the Income Tax Department for action under the Income Tax Act.
- To keep statistics of seizures, and prices/rates etc. for watching trends of smuggling and supply required material to the Ministry of Finance and other Ministries.

- To study and suggest remedies for loopholes in law and procedures to combat smuggling.
- The DRI, with its Headquarters in New Delhi, has 12 zonal units, 35 regional units, and 15 sub-regional units.

Delhi HC upholds validity of anti-profiteering provisions under GST

- The Delhi High Court upheld the constitutional validity of anti-profiteering provisions in the Goods and Services Tax (GST).
- Any reduction in the GST rate or benefit of input tax credit should be passed on to the end consumer and not retained by the business. This is the basis of the anti-profiteering provisions under GST.
- Under anti-profiteering provisions, it's illegal for a business to not pass on the benefits of the GST rate benefits to the end consumer, and thereby indulging in illegal profiteering.

Who regulates anti-profiteering under the GST?

- The Anti-Profiteering Rules, 2017 (defined under Section 171 of the Central Goods and Services Tax Act 2017), prevents entities from making excessive profits due to the lowering of GST.
- The Government has created the National Anti-Profiteering Authority (NAA) to find and take action against taxable registered persons indulging in illegal profiteering.
- NAA has the power to determine the methodology and procedure for determining whether a taxable person is engaging in illegal profiteering.

Reporting to the Anti-Profiteering Authority:

- Any interested party who has information to believe a taxable person is engaging in illegal profiteering from GST can refer the matter to the local screening committee.
- The State level Screening Committee shall examine the matter constituted by the State Governments consisting of officers of the State Government.

- If the screening committee determines that the information contains merit, the committee shall forward it with recommendations to the Standing Committee on Anti-Profiteering, which consists of officers of both the State Government and Central Government.
- If the Standing Committee contains enough proof to show that the taxable person engaged in illegal profiteering, then the committee shall refer to the Director General of Safeguards for a detailed investigation.

Investigation by the Director General of Safeguards:

- All matters referred by the Standing Committee will be investigated by the Director General of Safeguards.
- The Director General of Safeguards will collect evidence, conduct an investigation, and issue notices to the interested parties. The notice must contain the following details:
- The description of the goods or services in respect of which the proceedings have been initiated.
- Summary of the statement of facts on which the allegations are based.
- The time limit allowed to the interested parties and other persons who may have information related to the proceedings for furnishing their reply.
- Once all the information and hearings are complete, the Director General of Safeguards will provide a report of findings.
- A report of findings must be submitted by the Director General of Safeguards, normally within 3 months or within 6 months if an extension is provided.

Order under Anti-Profiteering Provisions:

Once all the proceedings are completed and a report is obtained from the Director General of Safeguards, the Members of Committee will pass an order. An order from the Authority could mandate:

- Reduction in prices.

- Return to the recipient, an amount equivalent to the amount not passed on by way of a commensurate reduction in prices along with interest.
- Imposition of penalty as specified under the Act.
- Cancellation of GST registration.

ENVIRONMENT

Namibian cheetah Aasha gives birth to 3 cubs in Kuno; 'indicator that animals are acclimatising'

- Kuno National Park is located in the Sheopur district of Madhya Pradesh.
- It is nestled near the Vindhyan Hills.
- It is named after the Kuno River(one of the main tributaries of the Chambal River) that cuts across it.
- Initially established as a wildlife sanctuary, it was only in 2018 that the government changed its status into a national park.
- It was selected under 'Action Plan for Introduction of Cheetah in India'. It has gained international recognition for conservation and restoration because of the recent reintroduction of cheetahs.
- Vegetation: The vegetation in the park varies from tropical dry deciduous forest to savannah grasslands.
- Landscape: It is characterized by rocky hills, ravines, and plateaus.
- Flora: Kardhai, Salai, and Khair trees dominate the forested area.
- Fauna:The protected area of the forest is home to the jungle cat, Indian leopard, sloth bear, Indian wolf, striped hyena, golden jackal, Bengal fox, and dhole, along with more than 120 bird species.

Meghamalai Hills present a new winged beauty

- The pristine hills of the Meghamalai in Tamil Nadu have thrown up a new species of 'silverline' butterflies.

- Cigaritis meghamalaiensis is the new species of butterfly.
- It has become the first butterfly species to be described from the Western Ghats in 33 years.
- The researchers had first come across the distinct species belonging to the Cigaritis genus in the high elevations of Periyar in Idukki in 2018.
- Further explorations have revealed the species to be confined to the Meghamalais and the adjoining Periyar Tiger Reserve.
- There are seven species of Cigaritisin the Western Ghats, viz., C. vulcanus, C. schistacea, C. ictis, C. elima elima, C. lohita lazularia, C. lilacinus, and C. abnormis. Of these, all except C. lilacinus have been reported from the southern Western Ghats.

Key facts about Periyar Tiger Reserve

- It is located in the Western Ghats of Kerala.
- It gets its name from the River Periyar, which has its origin deep inside the reserve.
- Two main rivers, Pamba and Periyar, drain the reserve.
- It is home to many tribal communities, including the Mannans and the Palians.
- Vegetation: It consists of tropical evergreen, semi-evergreen and moist deciduous.
- Flora: Teak, mangoes, rosewood, jamun, jacarandas, terminalias, tamarind, royal ponciana, bamboos etc.
- Fauna: Includes Elephants, Wild Pigs, Sambar, Gaur, Mouse Deer, Dole or Barking Deer, Indian Wild Dog and Tiger etc.

MP Wildlife: Pangolin Conservation Project Succeeds In State

- The pangolin conservation project launched to protect pangolins has succeeded at Pench Tiger Reserve and Satpura Tiger Reserve, as the mammals have started to breed there.

- Pangolins, also known as scaly anteaters, are the only known mammals with large keratin scales covering their skin.
- Of the eight species found worldwide (four each in Asia and Africa), two are found in India: the Indian Pangolin (Manis crassicaudata) and the Chinese Pangolin (Manis pentadactyla).

About Indian Pangolin:

- The Indian pangolin, also called the thick-tailed pangolin, is native to the Indian subcontinent.
- They are one of the most trafficked mammals in the world, despite an international ban on their trade.
- Distribution: It lives in India (south of the Himalayas), Bangladesh, Southern Nepal, Sri Lanka, and small parts of Pakistan.

Habitat:

- They are well adapted to desert regions and prefer barren, hilly areas. Their habitat extends up to 2,500 feet above sea level.
- Overall, they prefer soil that is soft and semi-sandy, suitable for digging burrows.
- They have also been shown to survive in various types of tropical forests, open land, grasslands, and in close proximity to villages.

Features:

- Like other pangolins, it has large, overlapping scales on its body, which act as armor.
- The Indian pangolin's armor is among the most effective in the mammalian world. It has about 13 rows of moveable, sharp scales covering its body, which are shed periodically.
- The colour of its scales varies depending on the colour of the earth in its surroundings.
- It can also curl itself into a ballas self-defense against predators.
- It is an insectivore, feeding on ants and termites.

- It is nocturnal and it rests in deep burrows during the day.

Conservation status:

- IUCN Red List: Endangered
- Wildlife (Protection) Act, 1972: Schedule I
- CITES: Appendix I

Extremely Rare 'Half Female, Half Male' Honeycreeper Snapped in Colombia

- Ornithologists in Colombia recently photographed a wild green honeycreeper with distinct half-green, or female, and half-blue, male, plumage.
- This distinct honeycreeper discovered had male plumage on one half of its body and female coloring on the other.
- This differs from the typical males of this species, which are bright blue with a black head, and the females, which are grass-green all over.
- The rare phenomenon is scientifically known as bilateral gynandromorphic. It arises from an error during female cell division to produce an egg, followed by double-fertilization by two sperm.

About Green Honeycreeper:

- It is a small bird in the tanager family.
- Scientific Name: Chlorophanes spiza
- Distribution: The New World Tropics (Rainforests in Central and South America), from Mexico to Brazil.

Features:

- It is 13–14 cm long and weighs 14 to 23 grams.
- The male is mainly blue-tinged green with a black head and a mostly bright yellow bill. The female is grass-green, paler on the throat, and lacks the male''s iridescence and black head.
- They are called Green Honeycreepers because the females and young birds are bright green with red eyes.

- Although males have, on average, slightly longer wings and tails than females, there is considerable variation within each sex and much overlap.
- It feeds largely on nectar, fruit, and insects and often frequents feeders supplying fruit.

Conservation Status:

- IUCN Red List: Least Concern

Forest department in Odisha plans nocturnal trail in -Dampara Wildlife Sanctuary

- As a first, the Forest Department in Odisha has planned a 'nocturnal trail' for people, especially students and researchers, in the Chandaka-Dampara Wildlife Sanctuary.
- **Location:** It lies partly within Khurda and partly in Cuttack Districts of Odisha State, and is in close proximity to the state capital, Bhubaneswar.
- It is nestled in the Khordha uplands of the 'North-Eastern Ghats' biotic region.
- Spread over 193.39 sq.km of rolling table land and small sprawling hillocks, it is a wildlife sanctuary since August 1982.
- It is known for the successful conservation of elephants, which is the principal species here.
- **Vegetation:** The floral diversity of the sanctuary is distributed in six types, which include secondary moist miscellaneous semi-evergreen forests, moist Kangada (Xyliaxylocarpa) forests, Coastal Sal forests, thorny bamboo brakes, planted Teak, and Eupatorium scrub.
- There are two water reservoirs, Deras Dam and Jhumka Dam, situated within the sanctuary.
- **Flora:** The main tree species are Kochila, Kalicha, Belo, Kangada, Giringa, Sunari, Sal, Kumbhi, Jamu, Karanja, Teak, and Sidha.
- **Fauna:**

- Apart from elephants, other mammals include Leopard, Chital, Barking deer, Mouse deer, Wild pig, Common langur, Rhesus monkey, small Indian civet, etc.
- Prominent birds of the sanctuary are Peafowl, Red jungle fowl, Crested serpent eagle, Great horned owl, Black headed oriole, etc.

North India's first river rejuvenation project 'Devika'

- Built on the lines of 'Namami Ganga', the project was launched in February 2019.
- It is north India's first river rejuvenation project.
- The project is implemented along the Devika River in Jammu and Kashmir.
- It has been included in the Government of India's National River Conservation Project (NRCP).
- Under the project, bathing "ghats" (places) on the banks of the Devika River will be developed, encroachments will be removed, natural water bodies will be restored, and catchment areas will be developed along with cremation ground.
- The project includes the construction of three sewage treatment plants with 8 MLD, 4 MLD and 1.6 MLD capacities, a sewerage network of 129.27 km, the development of two cremation ghats, protection fencing and landscaping, small hydropower plants, and three solar power plants.
- Built at a cost of over Rs 190 crore, the sharing of fund allocation is in the ratio of 90:10 by the centre and UT, respectively.
- On completion of the project, the rivers will see a reduction in pollution and an improvement in water quality.
- It will offer a unique destination both for pilgrim tourists as well as recreation tourists, in addition to being a state-of-the-art cremation centre.

Key Facts about Devika River:

- Devika River is considered the sister of the sacred river Ganga, and it has great religious significance.

Course:

- It originates from the hilly Suddha Mahadev temple in the Udhampur district of Jammu and Kashmir.
- It flows down towards western Punjab (now in Pakistan), where it merges with the Ravi River.
- As it appears and disappears in many places, Devika is also known as Gupt Ganga.

Maharashtra's indigenous Warlis teach a lesson about peaceful coexistence with leopards

- Indigenous Warli Tribe, living near Sanjay Gandhi National Park in Maharashtra teaches a lesson about peaceful coexistence with leopards.
- Warli Tribe are an adivasi indigenous tribe who live in the mountainous, coastal, and bordering regions of Gujarat and Maharashtra.
- The word "Warli" is derived from the word "Warla," which means "piece of land".
- Language - The Warli people speak Varli or Warli, an Indo-Aryan language. The language is typically classified as Marathi, but it is also known as Konkani or Bhil.
- Culture –They have their own animistic beliefs, way of life, customs, and traditions, and they have adopted many Hindu beliefs.
- The Warli culture is centred on the concept of Mother Nature, and natural elements are frequently depicted as focal points in Warli painting.
- The Warli tribe values folk art as well as gods, goddesses, and ritual culture. They use painting to depict their traditional way of life, customs, and traditions. The majority of these paintings are created by women.
- Style & attire - The Warli Tribe women wear a Lugden that is worn until the knee and is typically a one yard sari. The Maharashtrian rural regions influenced the sari. The knee length draping resembles the Maharashtrian sari draping style.

- Festival: Bohada is a three-day mask festival held by the Warli tribes. During this celebration, mask owners wear these masks and perform several times.
- Dance & music - The Warli Tribes perform Tarpa Dance along with Tarpa music instruments.
- They usually perform in groups. One person plays music with a Tarpa instrument and the rest of the people form a circle keeping the musician in the centre and dance with people.

New plant species discovered in Maharashtra's Pench Tiger Reserve: Forest official

- A new plant species of Polygonum genus has been discovered at Gol Pahadi Island of the Pench Tiger Reserve (PTR) in Maharashtra during a survey.
- A new plant species named Polygonum Chaturbhujanum has been discovered at Gol Pahadi island of PTR. It is an herb.
- Six plant species endemic to India have also been found in Pench. They are Aegineta indica, Boerhavia crispa, Habenaria gibsonii var foetida, Iphigenia pallida, Petalidium barlerioides and Barleria gibsonii.

Key facts about the Pench Tiger Reserve:

- It is located in the southern reaches of the Satpura hills in the Seoni and Chhindwara districts in Madhya Pradesh and continues in Nagpur district in Maharashtra as a separate Sanctuary.
- It is named after the Pench River, which flows from north to south through the Reserve.
- It comprises of the Indira Priyadarshini Pench National Park, the Pench Mowgli Sanctuary and a buffer.
- Terrain: It is undulating, with most of the area covered by small hills and steep slopes on the sides.
- Vegetation: The undulating topography supports a mosaic of vegetation ranging from a moist, sheltered valley to an open, dry-deciduous forest.

- Flora: Teak, saag, mahua, and various grasses and shrubs etc.
- Fauna: Chital, Sambar, Nilgai, Gaur (Indian Bison) and wild boar, tiger, dogs and wolf.

Ministry of Environment, Forest, and Climate Change submits proposals for Wetland City Accreditation under the Ramsar Convention on Wetlands for cities of Indore, Bhopal and Udaipur

- The Ramsar Convention during COP12 held in the year 2015 approved a voluntary Wetland City Accreditation system.
- It recognizes cities which have taken exceptional steps to safeguard their urban wetlands.
- It also recognizes the importance of wetlands in urban and peri-urban environments and to take appropriate measures to conserve and protect these wetlands.
- This 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.
- This scheme aims to further promote the conservation and wise use of urban and peri-urban wetlands, as well as sustainable socio-economic benefits for local populations.
- To be formally accredited, a candidate for WCA should satisfy the standards used to implement each of the six international criteria mentioned in Operational Guidance for WCA of the Ramsar Convention on Wetlands.
- Since Ramsar COP13, 43 cities from 17 countries have been officially recognized as "Wetland Cities".

The three nominated cities include:

- Indore: Founded by Holkars. Sirpur Lake, a Ramsar Site in the city has been recognised as an important site for water bird congregation and is being

developed as a Bird Sanctuary. A strong network of wetland mitras is engaged in bird conservation and sensitising the local community to protect Sarus Crane.

- Bhopal: Bhoj Wetland, Ramsar Site is the city's lifeline, equipped with the world-class wetlands interpretation centre, Jal Tarang. Additionally, the Bhopal Municipal Corporation has a dedicated Lake Conservation Cell.
- Udaipur: Located in Rajasthan, the city is surrounded by five major wetlands, namely, Pichola, Fateh Sagar, Rang Sagar, Swaroop Sagar, and Doodh Talai. These wetlands are an integral part of the city's culture and identity, help maintain the city's microclimate, and provide a buffer from extreme events.

Pallas fish eagle sighted in Chilika after 10 years

- Pallas fish eagle is also known as Pallas's sea eagle or band-tailed fish eagle, is a large, brownish sea eagle.
- It can be seen near lakes, marshes and large rivers, from lowlands to 5,000 metres of elevation.
- It feeds primarily on fish, but many other prey are part of its diet.
- It breeds usually near water in a large nest placed in a tall tree.
- Distribution: It is found in east Palearctic in Kazakhstan, Russia, Tajikistan, Turkmenistan, Uzbekistan, Mongolia, China, India, Nepal, Bangladesh and Myanmar.
- It is partially migratory.

Conservation status

- IUCN Red List: Endangered
- Threats: Humans contribute to the decline of this species through habitat degradation, pollution, and draining or overfishing lakes.

Key facts about the Chilika lake:

- It is a brackish water lake and a shallow lagoon with estuarine character spread across the districts of Puri, Khurda and Ganjam in the state of Odisha.

- It is connected to the Bay of Bengal by a wide channel that mostly runs parallel to the Bay separated by a narrow spit.
- It is located at the mouth of the Daya River, flowing into the Bay of Bengal.
- It can be broadly divided into four ecological sectors based on salinity and depth, namely the southern zone, the central zone, the northern zone and the outer channel.
- It is the largest wintering ground for migratory waterfowl found anywhere on the Indian sub-continent.
- The Nalaban Island within the lake is notified as a Bird Sanctuary under Wildlife (Protection) Act, 1972.
- In 1981, Chilika Lake was designated the first Indian wetland of international importance under the Ramsar Convention.

Two Rhinos Return to Assam Wildlife Sanctuary After 40 Years

- Two rhinos have recently returned to the Laokhowa and Burhachapori Wildlife Sanctuary after almost a 40-year gap following a successful anti-encroachment operation.
- The Laokhowa and Burhachapori Wildlife Sanctuaries are two centrally located Protected Areas (PAs) of Assam.
- They are located on the southern bank of the river Brahmaputra.
- In fact, though these two wildlife sanctuaries have two different names, they are ecologically and geographically a singular entity.
- They are surrounded by many key PAs like Kaziranga National Park to the east, Orang National Park and Pobitora Wildlife Sanctuaries to the west, Pakke-Nameri NPs to the north, and the rich reserve forests of Karbi Anglong to the south.
- They act as a connecting corridor for the migration of animals between Kaziranga and Orang National parks and hence, has been identified as buffer zones of Kaziranga Tiger Reserve.

- Landscape: It comprises of a mosaic of wet alluvial grassland, riparian, and semi-evergreen forests dotted by wetland and river systems.

Flora:

- A unique vegetation of this sanctuary is the abundance of freshwater mangrove trees.
- There are many species of trees and medicinal plants in the sanctuary. Trees like simul, korai, ajar, hijal, etc.are found in the area.

Fauna:

- It is home to the Great Indian one-horned rhinoceros, tiger, leopard, wild buffalo, hog deer, wild pig, and elephants.
- The highly endangered Gangetic River Dolphins are still seen in the waters of the Brahmaputra River adjacent to these PAs.
- The numerous natural and perennial wetlands are functioning as breeding grounds for various kinds of local fish species and highly important bird species such as Storks like Adjutant, Lesser Adjutant, White Stork, Black Necked Stork, Black Stork etc.

Toxic foam on Indrayani river again

- Indrayani River is a tributary of the Bhima River, which again is a tributary of the Krishna River.

Course:

- It originates in Kurvande village near Lonavla, a hill station in the Sahyadri mountains of Maharashtra.
- Fed by rain, it flows east from there to meet the Bhima River.
- It follows a course mostly north of the city of Pune.
- The river has great religious importance, and the two sacred towns of Alandi and Dehu are situated on its banks.

- Dehu is known to be a sacred place for being the hometown of the poet Saint Tukaram, who was a popular saint of Maharashtra, and Alandi holds the samadhi of the poet Dnyaneshwar.
- Valvan Dam at Kamshet, situated on the Indrayani River, is a hydroelectric generating station.

Key Facts about Bhima River:

- The Bhima River (also known as the Chandrabagha River)is a major river in southwest India.
- It is a major tributary of the Krishna River.
- Course:
- It originates in the Bhimashankar hillsnear Karjat in the Western Ghats, in the Pune District of Maharashtra.
- Bhima flows southeast through the states of Maharashtra, Karnataka, and Telangana.
- The Bhima River merges into the Krishna River at Kadlur (Raichur) in Karnataka.
- This 861 km-long river has the Western Ghats on the west, the Balaghat Range in the north, and the Mahadeo Hills in the south.
- The total basin area of the river is 48,631 sq. km, out of which 75 percent lie in the state of Maharashtra.
- Major tributaries are the Sina and Nira rivers.
- Pandharpur is an important pilgrimage centrelocated on the right bank of the Bhima River.

Central Tuber Crops Research Institute issues advisory on using parts of tapioca plant to feed cattle

- The ICAR-Central Tuber Crops Research Institute (CTCRI) here has issued an advisory on feeding animals with parts of cassava (tapioca) in view of the incident in Idukki where 13 cows died in a farm.

- Tapioca plant is a major horticulture cropcultivated on nearly 3 lakh hectares in Tamil Nadu, producing 60 lakh tonnes of the crop.
- It is cultivated throughout the tropical world for its tuberous roots, from which cassava flour, breads, tapioca, a laundry starch, and an alcoholic beverage are derived.

Climatic conditions required

- Soil: Any well-drained soil, preferably red lateritic loamy soil.
- It thrives best in a tropical, warm, humid climate
- Rainfall:Well-distributed rainfall of over 100 cm per annum.
- This crop can be cultivated upto an elevation of 1000 m.
- All parts of cassava/tapioca – leaves, stem, tuber and rind – contain the compounds called cyanogenic glucosides (CNGs), that is, linamarin and lotaustralin which are hydrolysed by endogenous enzyme linamarase to acetone cyanohydrin which may break down spontaneously liberating free hydrogen cyanide.
- Both acetone cyanohydrin and free cyanide are toxic.
- Its leaves contain about 10 times higher amount of CNGs than roots.
- The CNG content of cassava leaves decreases with the increase in the age of the leaves.
- The rind contains 10-30 times higher cyanoglucoside content than the edible parts.
- Feeding crushed peels or leaves immediately after crushing or without proper drying poses a high risk of cyanide poisoning in animals.

IISc study in Arunachal Pradesh reveals how logging and climate change impact montane birds

- Researchers at the Indian Institute of Science (IISc.) in Bengaluru have found that many bird species have started shifting to higher elevations due to rising temperatures in Eaglenest Wildlife Sanctuary.
- Eaglenest Wildlife Sanctuary is a protected area of India in the Himalayan foothills of West Kameng District, Arunachal Pradesh.
- It conjoins Sessa Orchid Sanctuary to the northeast and Pakhui Tiger Reserve across the Kameng river to the east.
- It is situated in the biodiversity hotspot of Eastern Himalayas and home to over 500 bird species.
- Altitude ranges are extreme: from 500 metres (1,640 ft) to 3,250 metres (10,663 ft).
- It is also a part of the Kameng Elephant Reserve.
- It is notable as a prime birding site due to the extraordinary variety, numbers and accessibility of species.
- It derives its name from the Red Eagle Division of the Indian army which was posted in the area in the 1950s.
- Flora: The temperate cloud forest is intermixed with dense bamboo patches and broadleaved evergreen forest across a wide altitudinal range, with conifers and rhododendrons at the higher elevations.
- Fauna: Capped langur, Bengal tiger, Asian elephant, red panda, Asiatic black bear, Arunachal macaque and gaur.

"Terror beast" fossils unearthed in Greenland are more than half a billion years old

- Scientists uncovered the fossils of the newfound species of carnivorous worm, named Timorebestia koprii, or "terror beast", in northern Greenland.
- Timorebestia koprii, meaning 'terror beasts', is a species of carnivorous worm, one of the earliest carnivorous animals to have colonised the water column during the early Cambrian period (541 million to 485.4 million years ago).

- The fossils were discovered from the Early Cambrian Sirius Passet fossil locality in North Greenland.
- They were giants of their day and would have been close to the top of the food chain. That makes it equivalent in importance to some of the top carnivores in modern oceans, such as sharks and seals back in the Cambrian period.
- Timorebestia is a distant but close relative of a living group of tiny marine worms known as arrow worms, or chaetognaths. These are much smaller ocean predators today that feed on tiny zooplankton.

In a first, hog deer spotted inside Rajaji Tiger Reserve

- Hog deer is a solitary creature but sometimes spotted feeding in small groups in open fields when food there is plentiful.
- For the most part it is sedentary and does not migrate.
- Males tend to be territorial and mark their territory with glandular secretions.
- This species exhibits sexual dimorphism. The females are slightly smaller than males and lack antlers.

Distribution:

- It has a native geographic range throughout India, including the Himalayan foothills and Southeast Asia.
- Humans have introduced free-ranging populations of this deer in Sri Lanka, Australia and the United States, including Texas, Florida, and Hawaii.

Habitat:

- It appears to prefer dense forests; however, they are often observed in clearings, grasslands and occasionally wet grasslands.
- This variation is usually associated with time of year and food distribution.

Conservation status:

- IUCN: Endangered
- Wildlife Protection Act 1972: Scheduled I

Key facts about the Rajaji Tiger Reserve:

- It is spread over three districts of Uttarakhand: Haridwar, Dehradun and Pauri Garhwal.
- It is situated along the hills and foothills of the Shiwalik ranges.
- In the year 1983, Rajaji Wildlife Sanctuary was merged with Motichur and Chilla wildlife sanctuaries and made into Rajaji National Park.
- It was named after the famous freedom fighter Rajgopalachari popularly known as "Rajaji"
- It''s location in a transition zone between temperate western Himalaya and central Himalaya enhances the species diversity.
- Vegetation: The area is covered with diverse forest types ranging from semi-evergreen to deciduous and from mixed broad-leaved to Terai grassland and has been classified as Indus-Ganges Monsoon Forest type.
- Flora: Rohini, Palash, Shisham, Sal, Sandan, Khair, Arjun, Baans, Semul, Chamaror etc.
- Fauna: Tiger and Asian Elephants. Leopard, Jungle cat and Himalayan Black Bear etc.

Warming oceans forced women in Zanzibar to switch from seaweed to climate-resilient sponge farming to stay afloat

- Sponge farming is a relatively new business opportunity that does not harm the marine environment.
- A sponge is a living animal which is made of loosely arranged cells that surround a skeleton of fibres.
- The specialised cells nestled within thousands of tiny chambers act as microscopic pumps, and tirelessly drawing water into the sponge's body with their whip-like tails.

- Sponges provide homes for many other animals, plants, and microorganisms. In many cases, they all work together in a mutual symbiotic relationship.
- Sea sponges exist in all oceans around the world and make up 20% of the global silicon biological sink.
- This unique pumping mechanism, which helps sponges extract nutrition and oxygen, also purifies the ocean water by removing impurities, including sewage.
- Uniqueness: Sponges, unlike seaweed, possess remarkable resilience to climate change, require minimal maintenance, and command premium market prices.
- Reproduction: Most sponges are hermaphrodites, harbouring both male and female reproductive organs, enabling them to self-propagate effortlessly.
- New sponges emerge from small buds that detach from the parent sponge and begin independent growth. Even damaged or fragmented sponges can regenerate into new individuals.
- This remarkable regenerative ability underpins the ease and feasibility of commercial sponge farming.

Uses:

- These sponges are used for bathing and general hygiene because they are naturally antibacterial and antifungal and can resist odours.
- Research has also shown that the spongy creatures play an important role
- Their skeletons break down into microscopic pieces of silicon, which helps control the carbon cycle in the ocean and reduces the greenhouse effect.
- Dissolved silicon is critical for the growth of diatoms, tiny organisms which absorb large amounts of CO2 in the ocean using photosynthesis.

BR Hills-bound vehicles to pay token green tax

- The Karnataka Forest Department started collecting green tax, Rs 10 from two-wheelers and Rs 20 from four-wheelers, entering BR Hills through Biligiri Rangaswamy Temple (BRT) Tiger Reserve.
- Location: It is located in the Chamarajanagar district of Karnataka State.

- The tiger reserve derives its name from "BILIGIRI ", the white rocky cliff which has a temple of Lord "VISHNU", locally known as 'Rangaswamy'.
- This unique bio-geographical entity, situated in the middle of the bridge between the Western Ghats and the Eastern Ghats in South India, was constituted as a Wildlife Sanctuary in 1974. BRT Wildlife Sanctuary was declared a Tiger Reserve in 2011.
- Vegetation: The forests of BRT Tiger Reserve are principally of dry deciduous type and are interspersed with moist deciduous, semi-evergreen, evergreen, and shola patches occurring at varying altitudes.
- Flora: The major species include Anogeissus latifolia, Dalbergia paniculata, Grewia teliaefolia, Terminalia alata, Terminalia bellirica, Terminalia paniculata, etc.
- Fauna: Animals including tiger, elephant, leopard, wild dog, bison, sambar, spotted deer, barking deer, four-horned antelope, sloth bear, wild boar, common langur, bonnet macaque, varieties of reptiles, birds, etc., are found in the Tiger Reserve.

EU carbon tax: India flags risk of trade info getting compromised

- India flagged concerns relating to sensitive and confidential trade data of its exporters getting compromised while complying with the European Union's Carbon Border Adjustment Mechanism (CBAM).
- Carbon Border Adjustment Mechanism (CBAM) is a proposed European Union (EU) tariff on carbon-intensive products.
- Purpose: To put a fair price on the carbon emitted during the production of carbon intensive goods that are entering the EU and to encourage cleaner industrial production in non-EU countries.
- It was adopted on May 17, 2023, and the CBAM transitional period started October 1, 2023.

- It is designed to counter the risk of carbon leakage and operates by imposing a charge on the embedded carbon content of certain imports that is equal to the carbon price of domestic production.

How does it Work?

- If implemented as planned, EU importers will have to buy carbon certificates corresponding to the carbon price that would have been paid in the EU if the goods had been produced locally.
- The price of the certificates would be calculated according to the auction prices in the EU carbon credit market.
- The amount of certificates required would be defined yearly by the quantity of goods and the embedded emissions in those goods imported into the EU.
- Companies in countries with a domestic carbon pricing regime equivalent to the EU's will be able to export to the EU without buying CBAM certificates.
- The CBAM will initially affect goods imported from non-EU countries that are particularly carbon-intensive, namely specified goods within the cement, electricity, fertilisers, aluminium, iron, steel, and hydrogen sectors, as well as some upstream and downstream products (mainly iron, steel, and aluminium).

Transition Period:

- In the transitional phase of the implementation of the CBAM, from October 1, 2023, to December 31, 2025, affected companies are subject to a reporting obligation without financial obligations.
- During this period, importers must determine and document direct and indirect emissions that occur in the course of the production process of the imported goods.
- In addition, affected EU importers are obliged to prepare a quarterly CBAM report that provides information on the imported quantity of CBAM goods, the direct and indirect embedded emissions contained therein (reporting on indirect embedded

emissions is initially only for cement, electric power, and fertiliser), as well as any carbon taxes effectively paid in the country of production.

- With the start of certificate trading from January 1, 2026, importers are obliged to purchase sufficient emission allowances for imported embedded emissions during the year.

Over 100 active permafrost structures identified in Jhelum basin, can cause catastrophic disasters in future: Study

- A rock glacier is a mass of rock, ice, snow, mud, and water that moves slowly down a mountain under the influence of gravity.
- Unlike an ice glacier, rock glaciers usually have very little ice visible at the surface.
- The rock glacier might consist of a mass of ice covered by rock debris, or it might consist of a mass of rock with interstitial ice.

Formation:

- Rock glaciers typically form in mountainous regions where there is a combination of permafrost, rock debris, and ice.
- One common scenario involves a pre-existing glacier that accumulates debris and rocks as it moves.
- Over time, if the glacier recedes or thaws, the debris-covered ice can transform into a rock glacier.
- These are classified as 'active' or 'relict' to indicate the status of permafrost within them, identified by the appearance of the rock surfaces.

Impacts:

- It increases the risk of glacial lake outburst floods (GLOFs).
- It may also make landslides more frequent with the land on the melting ice becoming loose.

Concerns raised over decimation of green cover in Cauvery basin: NGT issues notice to southern states

- The National Green Tribunal (NGT) has served notices to Karnataka, Tamil Nadu and Kerala governments, based on a report by the Indian Institute of Science (IISc) that has highlighted the massive reduction of green cover in the Cauvery basin over the past five decades.
- Cauvery basin extends over states of Tamil Nadu, Karnataka, Kerala and Union Territory of Puducherry.
- It is bounded by the Western Ghats on the west, by the Eastern Ghats on the east and the south, and by the ridges separating it from Krishna basin and Pennar basin on the north.
- The Cauvery River is one of the major rivers of the peninsula.
- Origin: It rises at an elevation of 1,341 m at Talakaveri on the Brahmagiri range near Cherangala village of Kodagu district of Karnataka.
- The river drains into the Bay of Bengal at Poompuhar in the Mayiladuthurai district of Tamil Nadu.
- Major left bank tributaries: Harangi, the Hemavati, the Shimsha and the Arkavati.
- Major right bank tributaries: Lakshmantirtha, the Kabbani, the Suvarnavati, the Bhavani, the Noyil and the Amaravati.
- The basin can be divided into three parts – the Western Ghats, the Plateau of Mysore and the Delta.
- The delta area is the most fertile tract in the basin.
- The principal soil types found in the basin are black soils, red soils, laterites, alluvial soils, forest soils and mixed soils. Red soils occupy large areas in the basin. Alluvial soils are found in the delta areas.
- National Parks in this basin: Bandipur National Park, Nagarhole National Park and Bannerghatta National Park.

In Assam, creeper conservation rides revived Karbi traditional game

- A dying traditional game, given a fresh lease of life at the ongoing Karbi Youth Festival (KYF) in central Assam's Karbi Anglong district, has fuelled a drive for conserving a creeper known as the African dream herb.
- A perennial climbing vine that is used by African traditional healers to induce vivid dreams that enables them to communicate efficiently with their ancestors.
- Common names: Giant sea bean, African dream herb, snuff box and Entada rheedii
- Distribution and habitat: It is indigenous to Africa, Asia, Australia and Madagascar. It grows in tropical lowlands, along the coastline and river banks, in woodland, thickets and riverine rain forests.
- This creeper yields a dark brown and spherical seed, almost the size of a human patella or kneecap, used to play 'Hambi Kepathu'. Associated with the origin of the Karbi community.

Uses

- A paste made from the leaves, bark and roots is used to clean wounds, treat burns and heal jaundice in children.
- Tea made from the whole plant is used to improve blood circulation to the brain and heal the after-effects of a stroke.
- The bark is used to treat diarrhoea, dysentery and parasitic infections.

What is Hambi Kepathu?

- It is also known as Simrit in some parts of Karbi Anglong, is played on three rectangular courts by two teams comprising three members each.
- Each member of a team has to place a 'hambi', or the glazed creeper seed, vertically on the midpoint of the boundary line of his court for a player of the rival team to hit with his 'hambi'.
- Hambi Kepathu, whose name is derived from the first syllables of the names of a Karbi sister-brother duo, is a male-only game like other traditional Karbi games

such as 'Pholong' (spinning top), 'Thengtom Langvek' (torch swimming), and 'Kengdongdang' (bamboo stilt race).

Arunachal Pradesh's Pakke Paga Hornbill Festival gears up for its 9th Edition

- The 9th edition of the Pakke Paga Hornbill Festival (PPHF), a state festival of Arunachal Pradesh, will take place at Seijosa in the Pakke Kessang district from January 18-20, 2024.
- The first-ever PPHF was held in 2015. The aim was to recognise the role played by the Nyishi tribal group in conserving hornbills in Pakke Tiger Reserve (PTR).
- Other objectives were to raise alternative sources of income for the region and to create awareness in the rest of India about the wonders of PTR and its surrounding areas.
- This year, the festival's theme is Domutoh Domutoh, Paga hum Domutoh. It translates to 'Let Our Hornbills Remain' in the Nyishi language.
- This year's festival aims to underscore the critical need for preserving these iconic birds.

Key points about Pakke Tiger Reserve:

- It is located in the East Kameng district of Arunachal Pradesh.
- It is surrounded by the Tenga Reserve Forest to the North, Doimara Reserve Forest on the West, Nameri National Park and Tiger Reserve (Assam) on the South.
- The landscape has high species diversity and endemicity as it forms the transition zone between the Indian and Malayan ecoregions.
- It is situated North of the river Brahmaputra in the transition zone between the Assam plains and the hilly forests of Arunachal Pradesh.
- Vegetation: It consists of tropical evergreen and semi-evergreen forest.

- Flora: Polyalthia simiarum, Pterospermum acerifolium, Sterculia alata, Stereospermum chelonioides, Ailanthus grandis and Duabanga grandiflor. About eight species of bamboo occur in the area.
- Fauna: Tiger, Elephant, predators like Leopard and Clouded leopard etc.

Odisha: Sambar, bison to be introduced in Chandaka wildlife sanctuary

- After relocating deer from Cuttack, the Odisha state government is planning to introduce Sambar and Gaur (bison) in the Chandaka-Dampara wildlife sanctuary.
- Chandaka-Dampara wildlife sanctuary is located in Khurda district of Odisha represents the north-eastern limits of Eastern Ghats.
- It is also a home to a number of threatened wild animals and birds.
- This landscape got sanctuary status in 1982.
- The climate of the area is tropical with three distinct and well-marked seasons i.e. summer, Rainy season and winter.
- Vegetation: Flora is moderately diverse with an intimate mixture of evergreen and deciduous elements. The area comes under semi-evergreen forest zone but the interplay of biotic factors has changed the original character of the vegetation.
- Flora: Dhaman (Grewia Tiliaefolia), Bankapasia (Kydia calycina), Jamu (Syzyggium Cuminii), Gandhana (Premna mucronata), Kansa (Hymenodictyon excelsum), Kusum (Schleichera oleosa), Marua (Vitex pinnata), Sidha (Lagerstroemia parviflora), Karanja, Thorny bamboo etc.
- Fauna: Elephants, Chital, Barking Deer, Wild Boar, Rhesus Monkey, Pangolin, Sloth Bear, Indian Wolf, Hyena and other mammals.

Odisha: Bhitarkanika National Park to get railway link

- Odisha's Bhitarkanika national park will soon be connected by rail as the proposed Jajpur Road-Dhamra railway line will pass through the park.
- Bhitarkanika National Park is located in Kendrapara district in the state of Odisha.

- The national park that is sprawling across 672 km² of mangrove swamp is situated on a delta formed by rivers, namely Brahmani, Baitarani, and Dhamra.
- Proximity to the Bay of Bengal makes the soil of the area enriched with salts; the vegetation and species of the sanctuary are those that are mainly found in the tropical and subtropical intertidal regions.
- It is home to a multitude of mud huts, creeks, backwaters, and estuaries.
- The area was designated as the Ramsar Site in 2002.

Flora:

- It houses various species of mangrove spread across its forest region, marshy lands, creeks, etc.
- Thespia, casuarinas, sundari, and indigo bush grasses are some of the other varieties of flora that flourish in the area.

Fauna:

- Bhitarkanika has one of the largest populations of endangered saltwater crocodiles in India.
- Gahirmatha Beach, which forms the boundary of the park in the east, is the largest colony of Olive Ridley Sea Turtles.
- Other mammals include monkeys, jackals, common langurs, otter, sambar deer, jungle cats, fox, Mongoose, wolfs, fishing cats, hyenas, etc.

The Indian tectonic plate is breaking into two. It's happening beneath Tibet

- Researchers unveiled new seismic data indicating that the Indian tectonic plate is splitting in two beneath the Tibetan plateau.
- Indian Tectonic Plate is a minor tectonic plate.
- The collision of the Indian plate with the Eurasian plate about 50 million years ago resulted in the erection of the Himalayan Mountains.
- As the Indian plate is still active today and drifts at a velocity of about 5 cm per year, earthquakes occur in the northern part of the plate.

- It is bound by four major tectonic plates. North of the Indian plate is the Eurasian plate; to the south east is the Australian plate; to the south-west is the African plate; and to the west is the Arabian plate.
- As the Indian plate moves northward relative to the Eurasian plate and collides with it, a convergent boundary is created.
- On the opposite side, the Indo-African boundary is divergent.
- The western Indo-Arabian boundary is lateral relative to each other, giving rise to a transform boundary.
- It was previously thought that the Indian and Australian plates formed one single plate as there is no clear type of boundary but recent seismologic evidence suggests that the two plates will have a transform boundary, as the drift velocities of these two plates are different even if the general direction of motion of the two plates is similar.

Supreme Court Asks CEC To Examine Issues Related To Mining In Aravali Hills

- The Supreme Court opined that if the State of Rajasthan believes that the mining activities in the Aravali Range pose a threat to the environment, it can also prevent mining activities in the Aravalli Range.
- Aravalli Range is a mountain range located in northwestern India.
- It is one of the oldest fold mountains in the world.
- It runs in a south-west direction, starting near Delhi, passing through southern Haryana and Rajasthan, and ending in Gujarat.
- The highest point of the Aravalli range is Guru Shikhar, which stands at an elevation of 5,650 feet on Mount Arbuda.
- It is 15 km from Mount Abu, which is a popular hill station in the Aravalli Range.
- Rivers: Three major rivers and their tributaries flow from the Aravalli, namely the Banas and Sahibi rivers, which are tributaries of the Yamuna, as well as the Luni River, which flows into the Rann of Kutch.

- The Aravalli acts as the edge which separates the Thar desert from the plains and plateaus of eastern Rajasthan.
- The range is rich in mineral resources like copper, zinc, lead, and marble.
- It is divided into two sections: the Sambhar-Sirohi ranges, taller and including Guru Shikhar; and the Sambhar-Khetri ranges, consisting of three ridges that are discontinuous.
- There are several national parks and wildlife sanctuaries that fall within the belt of Aravalli Hills. Sariska National Park, Kumbhalgarh Sanctuary, and Mount Abu Sanctuary are among them.

Formation:

- It is part of the Aravalli-Delhi orogenic belt, which is a large and complex geological structure formed due to the collision of tectonic plates during the Proterozoic era.
- It is part of the Indian Shield, that was formed from a series of cratonic collisions.
- In ancient times, Aravalli were extremely high, but since have worn down almost completely by millions of years of weathering.

- **Restoration plan for Kanger valley park on anvil**
- In a first-of-its-kind model of convergence, Kanger Valley National Park is working with a coalition of various organizations and government departments to prepare a landscape-based ecological restoration plan for the national park.
- The National Park derives its name from the Kanger River, which flows in its length.
- It got the status of a national park in 1982.
- The entire Park constitutes the core area and there is no buffer zone.
- Topography: It is noted for its highly heterogeneous land formations, ranging from low, flat, and gentle areas to steep slopes, plateaus, valleys, and stream courses.

- It is home to three exceptional caves, famous for their amazing geological structures: Kutumbasar, Kailash, and Dandak-Stalagmites and Stalactites.
- National Park is known for the presence of underground limestone caves with dripstone and floston. The stalagmites and stalactite formations are still increasing.
- Tirathgarh Waterfall is located in the park.
- The Park also has a sizable tribal population.
- Flora: It is a typical mixed humid deciduous type of forest in which the Sal, Saugaun, teak, and bamboo trees are available in abundance.

Fauna:

- Major wild animals include tigers, mouse deer, leopards, wildcat, sambar, chital, barking deer, langurs, jackals, rhesus macaque, flying squirrel, etc.
- The aerial fauna at the park consists of common hill myna, red jungle fowl, spotted owlet, racket-tailed drongos, parrots, etc.

Location:

- It is located in Jagdalpur, in the Bastar district of Chhattisgarh state.
- It is located on the banks of the Kholaba River (tributary of the Godavari River).

A fisherman in Odisha's Balasore district captured a rare and endangered Gangetic dolphin

- Common Name: Susu
- Scientific Name: Platanista gangetica .
- Population: Less than 1800 (1200 to 1800).
- Habitat: Ganges river dolphins once lived in the Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu river systems of Nepal, India, and Bangladesh.

Some characteristics:

- The Ganges river dolphin can only live in freshwater.
- It is essentially blind and they hunt by emitting ultrasonic sounds.

- It has a sturdy, yet flexible, body with large flippers and a low triangular dorsal fin.
- Calves are chocolate brown at birth and then have grey-brown smooth, hairless skin as adults.
- Females are larger than males and give birth once every two to three years to only one calf.

Conservation status:

- IUCN: Endangered
- Wildlife (Protection) Act: Schedule-I
- CITES: Appendix I

Government's conservation efforts:

- In 2009, Gangetic dolphins were declared the national aquatic animal of India.
- The Prime Minister announced 'Project Gangetic Dolphin' on August 15, 2023 for the conservation of the Gangetic dolphins.

4 lakh migratory birds to arrive at Kashmir's Wular Lake, 7 new species sighted

- Wular Lake is the largest freshwater lake in India.
- It is located in the Bandipora district of Jammu and Kashmir.
- It lies at the north end of the Valley of Kashmir, 20 miles (32 km) north-northwest of Srinagar.
- It is spread over a total area of 200 square km covering almost 24 km in length and 10 km in breadth.
- The lake basin was formed as a result of tectonic activity and is fed by the Jhelum River.
- The lake lies at an altitude of 1,580 m.
- It is also said to be a remnant of Satisar Lake, that existed in ancient times.
- This lake also has a small island in its centre called the 'Zaina Lank'. This island was constructed by King Zainul-Abi-Din.

- In 1990, it was designated as a Ramsar Site.

Key Facts about Jhelum River:

- It is a river that flows in India and Pakistan.
- It is a tributary of the Indus River.
- It is the main waterway of the Kashmir valley.

Course:

- Origin: It originates at the Verinag Spring at Anantnag, at the foot of the Pir Panjal range in the Kashmir Valley.
- It then flows via Srinagar and Wular Lake prior to entering Pakistan.
- The river makes a deep, narrow gorge on its way to Pakistan.
- It joins the Chenab River near Trimmu, Pakistan.
- Length: It has a total length of about 725 km (450 mi).
- Major Tributaries: Kishanganga (Neelum) River, Kunhar River, Sandran River, Bringi River, Arapath River, Watlara River, Lidder River, and Veshaw River.

How do you plan to save the Great Indian Bustard, Supreme Court asks government

- Great Indian Bustard is a bustard found on the Indian subcontinent.
- Scientific Name: Ardeotis nigriceps
- It is among the heaviest of the flying birds.
- Distribution: The species has a current viable population of 100- 150 individuals in India and mainly survives in the Thar Desert of Rajasthan that holds about 100 individuals.
- Habitat: It inhabits dry grasslands and scrublands.

Features:

- It is a large bird with a horizontal body and long, bare legs, giving it an ostrich-like appearance.

- The sexes are roughly the same size, with the largest individuals weighing 15 kg (33 pounds).
- It can easily be distinguished by its black crown on the forehead, contrasting with the pale neck and head.
- The body is brownish, and the wings are marked with black, brown, and grey.
- They breed mostly during the monsoon season, when females lay a single egg on open ground.
- Lifespan: 12-15 years
- These birds are opportunistic eaters. Their diet ranges widely depending on the seasonal availability of food. They feed on grass seeds, insects like grasshoppers and beetles, and sometimes even small rodents and reptiles.

Conservation Status:

- IUCN Red List: Critically Endangered
- Wildlife (Protection)Act, 1972: Schedule 1
    - CITES: Appendix 1

Parambikulam Tiger Reserve welcomes new residents

- Faunal survey at the Parambikulam Tiger Reserve has added 11 new species records including three birds, four butterflies and four odonates to its database.
- Location: It is nestled in the picturesque and extensive Nelliampathy–Anamalai landscape of the Western Ghats Mountains in Palakkad and Thrissur districts of Kerala.
- It was declared a Tiger Reserve in 2009, with a total area of 643.66 sq. Km.

Vegetation:

- The reserve supports diverse habitat types, viz., evergreen, semi-evergreen, moist deciduous, dry deciduous, and shola forests.
- Other unique habitats like montane and marshy grasslands, locally known as "vayals", are also found.

Flora:

- The reserve houses teak, rosewood, sandalwood, and neem trees.
- It is credited with the world's first scientifically managed plantation of teak. It is home to the world's oldest and tallest teak tree named 'Kannimara', which is 450 years old and at a height of 40 metres.

Fauna:

- The common animals found are Leopard, Elephant, Gaur, Spotted Deer,
- Sambar, Barking Deer, Common Langur, Nilgiri Langur, Malabar giant squirrel, Sloth Bear, and Wild dog.
- The only South Indian wild goat, the Nilgiri Tahr is found on the high-altitude rocky hills and grasslands in the tiger reserve.
- The tiger reserve is also home to several rare small animals like Tarantula (large bodied spiders).

Researchers discover 5 new species of reptiles that give birth to their young ones

- A team from the Thackeray Wildlife Foundation (TWF) has discovered the first-ever vivparous skink genus and five new species belonging to it from peninsular India.
- The researchers have named the new genus as "Dravidoseps", a combination of the Sanskrit words "Dravid" and 'Seps".
- This genus 'Dravidoseps' is distinct from the genus 'Subdoluseps', as it gives birth to its young—instead of laying eggs.
- All the five newly discovered species are from the state of Tamil Nadu, and have been named as:
- Dravidoseps gingeeensis' (from the Gingee Hills),
- Dravidoseps jawadhuensis' (Jawadhu Hills),
- Dravidoseps kalakadensis' (Kalakad Mundanthurai Tiger Reserve),
- Dravidoseps srivilliputhurensis' (Srivilliputhur Megamalai Tiger Reserve)

- Dravidoseps tamilnaduensis' (Kolli, Pachaimalai and Yercaud Hills).

About Skink:

- Skink is the common name for the lizards that comprise the family Scincidae.
- It is typically smooth and shiny with small or rudimentary legs.
- It is a type of reptile that has been around since the time of the dinosaurs.
- They are mostly secretive ground dwellers or burrowers.
- Skinks are highly alert, agile and fast moving and actively forage for a variety of insects and small invertebrates.
- Habitat: They can be found in a variety of habitats, from deserts to rainforests, and are well-known for their ability to camouflage with their surroundings.
- Distribution: These are represented throughout most of the world but are especially diverse in Southeast Asia and its associated islands, the deserts of Australia, and the temperate regions of North America.

Climate impact: Tamil Nadu study links vector-borne scrub typhus cases with high rainfall, humidity

- According to a new study conducted in Tamil Nadu's Vellore, every millimetre increase in rainfall could lead to a 0.5 to 0.7 per cent rise in monthly scrub typhus cases.
- Scrub Typhus is an infectious disease caused by bacteria called Orientia tsutsugamushi.
- It is transmitted through infected mites.

Symptoms

- The symptoms typically include fever, headache, body ache and sometimes a rash.
- In severe cases, the infection can lead to respiratory distress, brain and lung inflammation, kidney failure and multi-organ failure, ultimately resulting in death.

- Several factors like vector abundance, climatic factors, exposures like farming and owning domestic animals, outdoor activities and sanitation, affect its prevalence.
- This disease is more prevalent in cooler months.
- In Northeast India, cases of scrub typhus occur from July to November in Manipur, July to October in Sikkim and September to November in Darjeeling.
- It will not spread from person to person.
- Treatment: Scrub typhus should be treated with the antibiotic doxycycline. Doxycycline can be used in persons of any age.
- There is no vaccine available for this disease.

Key facts about Typhus fever

- Typhus fevers are a group of diseases caused by bacteria that include epidemic typhus, scrub typhus, and murine typhus.
- Epidemic typhus: It is caused due to Rickettsia prowazeki and it is spread to people through contact with infected body lice.
- Scrub typhusis: It caused due to Orientia tsutsugamushi and spread by chiggers.
- Murine typhus: It is caused due to Rickettsia typhi spread by fleas. It occurs in tropical and subtropical climates around the world
- Habitat: They are primarily found in freshwater habitats, sustaining themselves with a diet comprising fish and crustaceans.
- Threats: Habitat destruction, deforestation, reduction in prey biomass etc.

Conservation status

- IUCN: Vulnerable
- Wildlife Protection Act of 1972: Schedule I
- CITES: Appendix I

Kaziranga's fauna enhanced as two new mammalian species enlisted

- The Kaziranga National Park and Tiger Reserve in Assam has received the addition of two new mammalian species, the elusive binturong (Arctictis binturong) and the small-clawed otter.
- Binturong is the largest civet in India colloquially known as the bearcat.
- Common names: Asian Bearcat and the Asian Civet.
- Scientific name: Arctictis binturong
- It is a generally solitary and nocturnal animal that spends the majority of its time moving about slowly and cautiously amongst the trees.
- It has scent glands which are located just under its tail. These glands are used to mark trees and foliage to outline an individual's territory.
- It belongs to the same family as other small carnivores including Civets, Genets, Mongooses, and Fossa.
- The binturong is one of only two carnivores that has a prehensile tail. (The other is the kinkajou).
- The prehensile tail acts almost like another leg helping both with climbing, and gripping onto branches to give the Binturong more stability.
- Habitat: It is a medium sized carnivore that is found inhabiting the dense forests of South-East Asia.
- Distribution: China, India, Thailand, Cambodia, Laos, Malaysia, Indonesia, the Philippines and on the island of Borneo.

Conservation status

- IUCN: Vulnerable
- Wildlife Protection Act of 1972: Schedule I
- CITES: Appendix III

Key facts about Small-clawed otter

- It exhibit partially webbed feet and short claws, enhancing their adeptness as hunters in aquatic environments.
- Distribution:

- This mammal boasts a broad distribution range spanning from India eastwards to Southeast Asia and southern China.
- In India, it predominantly inhabits protected areas in West Bengal, Assam, Arunachal Pradesh, Karnataka, Tamil Nadu, and certain regions of Kerala within the Western Ghats.

Senegal's pink lake is on the verge of disappearing — how to protect it?

- The Lake Retba's waters are virtually devoid of life and are on the verge of disappearing due to pollution and mining.
- Lake Retba is also known as Lac Rose (the Pink Lake).
- Location: It is located north of the Cap Vert peninsula of Senegal, northeast of Dakar (Senegal).
- The lake is isolated from the sea by sand dunes.
- Its fresh water comes from the seasonal water table in the dunes, which are higher than the lake. Thus, the sea provides most of the lake's water and all of its salt.
- The Pink Lake is one of the main tourist destinations in the Dakar region, primarily because of the pink colour of its waters.

Why is it pink?

- The pink coloration is due to the proliferation of halophilic green algae (living in a salty environment), Dunaliella salina, which contain red pigments.
- The algae is associated with halophilic bacteria of the genus Halobacterium.
- This microscopic alga's resistance to salt comes from its high concentration of carotenoid pigments, which protect it from light, and its high glycerol content.
- In fact, Dunaliella salina contains at least four antioxidant pigments (beta-carotene, astaxanthin, lutein and zeaxanthin), which are rich in vitamins and trace elements.

- When salinity is high, algae with red pigments thrive, and when salinity is low, they give way to other algae rich in green pigments.

South Africa's Agulhas long-billed lark: adapting and surviving despite farming taking over their nesting grounds

- Agulhas long-billed lark is adapting and surviving despite farming taking over their nesting grounds in South Africa.
- Agulhas long-billed lark is a small passerine bird.
- It builds nests on the ground mainly in Renosterveld fynbos, a type of vegetation filled with grasses and wild spring flowers.
- It is a South African endemic species restricted to the Agulhas plains.
- These are generally "little brown birds" that are often difficult to identify.
- These larks prefer to nest in Renosterveld.
- Habitat: It appears to have adapted quite well to its modified habitats, like farmlands, although its distribution is patchy for unknown reasons.
- Distribution: Its restricted range is centred on the Agulhas arable farmlands, from east of the Hottentots-Holland mountain range to Mossel Bay.

Conservation status

- IUCN: Near-threatened
- Threats: Land use changes or any freak occurrence could be detrimental to the whole species and to other species that depend on this vegetation.

What is a passerine bird?

- A passerine or passeriform is a member of the order Passeriformes, the largest order of birds, containing more than half of all species.
- They are also known as perching birds or, less accurately, as songbirds.
- Passerines are all terrestrial, found on all continents except Antarctica.

Albatrosses are threatened with extinction — and climate change could put their nesting sites at risk

- Wandering albatrosses are threatened with extinction and climate change could put their nesting sites at risk.
- Wandering albatrosses is the world's largest flying bird, with a wingspan reaching an incredible 3.5 metres.
- These birds are oceanic nomads: they spend most of their 60 years of life at sea and only come to land to breed.
- These are found almost exclusively in the Southern Hemisphere.
- Their playground is the vast Southern Ocean— the region between the latitude of 60 degrees south and the continent of Antarctica.
- Marion Island and Prince Edward Island together support about half of the entire world's wandering albatross breeding population.
- Habitat: They breed on several subantarctic islands, which are characterised by peat soils, tussock grass, sedges, mosses, and shrubs.
- Conservation status- IUCN: Vulnerable
- Threats: The most likely cause is longline fishing, as they become hooked and will drown, as well as the ingestion of plastics, which kills both chicks and adults.

In Jambavan's land: Sloth bears mostly coexist peacefully with humans in Karnataka; but conflict is not non-existent

- Scientific Name: Melursus ursinus
- Sloth bears are one of the eight bear speciesfound across the world.
- They are myrmecophagous, meaning, they find bugs and termites to be their most sought-after meal.
- Habitat: They live in a variety of dry and moist forestsand in some tall grasslands, where boulders, scattered shrubs and trees provide shelter.

- Appearance: They have long, shaggy dark brown or black fur and curved claws, which are the longest out of any of the bear species.

Conservation Status

- IUCN: Vulnerable
- Wildlife Protection Act, 1972: Schedule 1
- Key to mitigate human-sloth bear confrontations: Enhancing habitat connectivity, minimising human-wildlife interaction zones, and implementing responsible waste management practices.
- Sloth Bear Sanctuaries in India: Daroji Sloth Bear Sanctuary (Karnataka), Jessore Sloth Bear Sanctuary (Gujarat).

Govt diverts Chenab river water to expedite hydroelectric project in Jammu and Kashmir

- The government announced diversion of Chenab river water through diversion tunnels to expedite the 850-MW Ratle Hydro Electric Project in Jammu & Kashmir.
- Ratle Hydro Electric Project is an 850 MW run-of-river hydroelectric power project being built on the Chenab River in the Kishtwar District of Jammu and Kashmir.
- The project is being developed by Ratle Hydroelectric Power Corporation (RHPCL), which was formed as a joint venture (JV) between Jammu & Kashmir State Power Development Corporation (JKSPDC) and India's state-owned National Hydroelectric Power Corporation (NHPC).
- The project comprises a 133-metre-tall and 194.8-meter-long concrete gravity dam, a diversion dam, and an underground powerhouse on the right bank of the river.

Key Facts about Chenab River:

- It is a major river of India and Pakistan.

- Origin: It is formed by the confluence of two streams, Chandra and Bhaga, at Tandi in the upper Himalayas in the Lahaul and Spiti Districts of Himachal Pradesh.
- In its upper reaches, it is also known as the Chandrabhaga.
- It is a tributary of the Indus River.

Course:

- It flows west through Jammu and Kashmir union territory, between the steep cliffs of the Siwalik Range (south) and the Lesser Himalayas (north).
- Turning southwest, it continues into Pakistan, descending from the uplands into the broad alluvial lowlands of Punjab province.
- After receiving the Jhelum River near Trimmu, the Chenab empties into the Sutlej River, a tributary of the Indus River.
- Its total length is about 605 miles (974 km), and it feeds several irrigation canals.
- Tributaries: The tributaries of the Chenab River include Miyar Nalla, Sohal, Thirot, Bhut Nalla, Marusudar, and Lidrari.

Climate change: Four new emperor penguin groups found by satellite

- Four new emperor penguin colonies have been identified in Antarctica from satellite imagery.
- Emperor Penguin is the largest of all the different kinds of penguin species.
- Scientific Name: Aptenodytes forsteri

Distribution:

- They are found throughout the Antarctic continent and sub-Antarctic islands.
- In breeding months (April to November), emperor penguin colonies are found between 66° and 78° south latitude along the Antarctic coastline.
- Habitat: It is the most ice-adapted of any penguin species, inhabiting pack ice and surrounding marine areas. They spend their entire lives on Antarctic ice and in its waters.

Features:

- Adults are coloured black and white with areas of orange and yellow on the head, neck, and breast.
- They are approximately 120 cm tall and weigh around 40 kg.
- They have wingspans ranging from 76 to 89 cm.
- They gain and lose weight rapidly during breeding and feeding seasons. On average, females tend to weigh less than males.
- They have two layers of feathers, a good reserve of fat, and proportionally smaller beaks and flippers than other penguins to prevent heat loss.
- They also huddle close together in large groups to keep themselves and each other warm.
- They are capable of diving to depths of approximately 550 metres (1,800 feet) in search of food; they are the world's deepest-diving birds.
- They breed in the winter.
- Lifespan: 15 to 20 years

Conservation Status:

- IUCN Red List: Near Threatened

India's southernmost vulture population stands at 320 individuals

- More than 300 vultures were recorded in the completed synchronous vulture survey in the Nilgiri Biosphere Reserve (NBR).

Location:

- It is located in the Nilgiri Mountains of the Western Ghats.
- It encompasses parts of Tamil Nadu, Kerala, and Karnataka.
- It was the first biosphere reserve in India, established in 1986.
- The total area of the reserve is 5,520 sq. km. It is the largest protected forest area in India.

- The Mudumalai Wildlife Sanctuary, Wyanaad Wildlife Sanctuary, Bandipur National Park, Nagarhole National Park, Mukurthi National Park, and Silent Valley are the protected areas present within this reserve.
- Vegetation: It harbours a wide spectrum of ecosystem types, such as tropical evergreen forests, Montane sholas and grasslands, semi-evergreen forests, moist deciduous forests, dry deciduous forests, and thorn forests.
- Climate: The annual rainfall of the reserve ranges from 500 mm to 7000 mm, with temperatures ranging from 0°C during the winter to 41°C during the summer.
- Tribal Population: Tribal groups like the Todas, Kotas, Irullas, Kurumbas, Paniyas, Adiyans, Edanadan Chettis, Cholanaickens, Allar, Malayan, etc., are native to the reserve.
- It is India''s first biosphere reserve under UNESCO''s Man and the Biosphere Programme.

Flora:

- About 3,300 species of flowering plants can be seen here. Of the 3,300 species, 132 are endemic to the NBR.
- Some of the plants entirely restricted to the NBR include species of Adenoon, Calacanthus, Baeolepis, Frerea, Jarodina, Wagatea, Poeciloneuron, etc.

Fauna:

- It includes the largest known population of two endangered animal species, namely the Nilgiri Tahr and the Lion-tailed macaque and the largest South Indian population of elephant, tiger, gaur, sambar, and chital.

Majority of land hermit crab species now use trash for shells

- The majority of terrestrial hermit crab species worldwide have used trash as shells, according to a study by experts.
- Hermit crabs are small crustaceans that lack a shell and must “borrow” one from another animal.

- They use empty snail shells (e.g., whelk or periwinkle) or other hollow objects as a shelter for partial containment and protection of the body.
- Habitat: Hermit crabs, worldwide in distribution, occur in sandy- or muddy-bottomed marine waters and occasionally on land and in trees.

Features:

- They can grow up to 6 inches long.
- There are two pairs of antennae and five pairs of legs.
- They are opportunistic scavengers, feeding on anything they can find.
- They have tough pincers but a soft body, which they coil up inside their borrowed shell, using their hooked tail to help them to grip on.
- They molt (shed their skin) and change shells as they grow.
- Despite their name, hermit crabs are social creatures and can live together in pairs or groups.
- They can live for up to 10 years.

Arunachal's Bugun Community Reserve, home to endangered species

- Arunachal Pradesh, at the Republic Day parade, showcased its Singchung Bugun Village Community Reserve, a 17-square-kilometre biodiversity hotspot.
- Singchung Bugun Village Community Reserve is a 17-square-kilometre biodiversity hotspot located in Arunachal Pradesh, around 40 km from the famous Eagle nest Wildlife Sanctuary.
- The reserve was created in 2017 to protect biodiversity in the region.
- It is home to critically endangered species such as the passerine bird Bugun Liocichla (Liocichlabugunorum), which is named after the Buguns community.
- It was one of the first bird species to be discovered in India since the country's independence in 1947, and it lives only on the Buguns' community lands.

- The Buguns are an indigenous community with a population of about 2,000 people, spread across 12 villages that are dotted outside the forests of Eagle nest Wildlife Sanctuary.

What is a Community Reserve?

- Conservation reserves and community reserves in India are terms denoting protected areas of India which typically act as buffer zones, connectors, and migration corridors between established national parks, wildlife sanctuaries and reserved and protected forests in India.
- Such areas are designated as conservation reserves if they are uninhabited and completely owned by the Government of India but used for subsistence by communities, and community reserves if part of the land is privately owned.
- These protected area categories were first introduced in the Wildlife (Protection) Amendment Act of 2002, an amendment to the Wildlife Protection Act (WLPA) of 1972.
- These categories were added because of reduced protection in and around existing or proposed protected areas due to private ownership of land, and land use.
- The provisions of the WLPA apply to an area once it has been declared a community reserve.

Dalma Wildlife Sanctuary to offer 'canopy walk' facility by mid-Feb

- The canopy walk facility at a height of 25 feet at the Dalma Sanctuary will be set up soon.

Location:

- It is located 10 kilometres from the city of Jamshedpur in the state of Jharkhand.
- It is situated around the Dalma Hills on the Chota Nagpur Plateau.
- The Sanctuary gets its name from the "Dalma mai" a local goddess who is revered and worshipped by the local people and the people of adjoining villages of Dalma.

- Inaugurated in 1975, it contains a significant population of Indian Elephants.
- The sanctuary covers almost 193 sq. km. of forest area.
- The entire forest of Dalma Sanctuary falls in the catchment of the Subarnarekha River and Dimna Lake of Jamshedpur.
- Vegetation: The forests of Dalma come under the category "Dry peninsular Sal" and "Northern dry mixed deciduous Forest".
- Flora: Medicinal plants like Ananatmula, Satawari, Sarpagandha, etc. are abundant in the sanctuary. Various types of trees, climbers, herbs, shrubs, and orchids are found here.

Fauna:

- Besides elephants, the sanctuary has a considerable population of other wildlife like barking deer, wild boar, giant squirrel, porcupine, pangolin, sloth bear, etc.
- Commonly seen birds in the sanctuary are falcons, golden orioles, Indian tree pie, paradise fly catchers, grey hornbills, Indian peafowl, etc.

Scientists discover new kangaroo lizard species from Western Ghats

- Researchers named the new, scaly reptiles after the Evolutionarily Distinct and Globally Endangered of Existence (EDGE) program through the Zoological Society of London.
- The new species Agasthyagama edgeor the northern kangaroo lizard belongs to the Agamidae family.
- A group of scientists discovered the new species from the southern Western Ghats at Kulamavu in Idukki.
- The species is the second one of the Agasthyagama genus after A. beddomii or Indian kangaroo lizard that has been previously reported from Sivagiri hills in Tamil Nadu.

Features

- A reduced fifth toe makes these reptiles poor climbers and hence do not climb trees like other lizards.
- Instead, they are mostly terrestrial and found in areas with dense leaf litter cover.
- They feed on small insects, this variety of kangaroo lizard runs fast and hides within dry leaves to evade predators.
- It is known to have a maximum snout-vent length of 4.3 cm.

Eravikulam National Park is to be shut from February 1 for the calving season of Nilgiri Tahr

- Eravikulam National Park (ENP), the natural habitat of the Nilgiri tahr, will soon be closed for the calving season of the species.
- Location: It is located along the Western Ghats in the Idukki district of Kerala.
- It was declared a National Park in 1978.
- The Park covers an area of 97 sq. km.
- The highest peak south of the Himalayas, the Anamudi (2695 metres), is situated on the southern side of the park.
- This is also the land of "Neelakurinji", the flower that blooms once every twelve years.
- Climate: The park receives heavy showers during the southwest (June/July) and retreating (October/November) monsoons and is one of the wettest areas in the world.
- Vegetation: The major part of the park is covered with rolling grasslands, but several patches of shola forests are also found in the upper part of the valley.
- Flora:
- Important flora includes Actinodaphne bourdilloni, Microtropis ramiflora, Pittosporum tetraspermium, Sysygium aronottianum, Chrysopogon Zelanieus, etc.

- The shola grasslands are exceptionally rich in balsams and orchids, including the long-thought-extinct variety Brachycorythis wightii.
- Fauna:
- The Nilgiri Tahr, Gaur, Sloth Bear, Nilgiri Langur, Tiger, Leopard, Giant Squirrel, and wild dog are the common species.
- Half of the world population of the endangered Nilgiri Tahr lives here.
- The Atlas moth, the largest of its kind in the world, is seen in this park.
- 140 species of birds, of which 10 are unique to the Western Ghats. More than 100 varieties of butterflies have been recorded here.

Key Facts about Nilgiri Tahr:

- It is an endangered mountain ungulate endemic to the southern part of the Western Ghats.
- Scientific Name: Nilgiritragus hylocrius
- Locally, the animal is called 'Varayaadu'.
- They are known for their gravity-defying skills in climbing steep cliffs, earning them the nickname Mountain Monarch.
- It is the state animal of Tamil Nadu.

Distribution:

- Their present distribution is limited to approximately 5% of the Western Ghatsin southern India (Kerala and Tamil Nadu).
- Eravikulam National Parkin Kerala has the highest density and largest surviving population of Nilgiri tahr.
- Habitat: They inhabit the open montane grassland habitatsat elevations from 1200 to 2600 m of the South Western Ghats.

Features:

- It has a stocky body with short, coarse furand a bristly mane.
- Both sexes have curved horns, which are larger in the males, reaching up to 40 cm in males and 30 cm in females.

- Adult males develop a light grey area or 'saddle' on their backsand are hence called 'saddlebacks'.
- It has a short grey-brown or dark coat.
- Conservation Status:
- IUCN Red List: Endangered
- Wildlife (Protection) Act of India, 1972: Schedule I

India says its elusive snow leopard population is at 718

- The first scientific survey of the snow leopard in India shows the country is home to 718 of the elusive cats.
- Snow Leopard is a large, long-haired Asian cat, classified as either Panthera uncia or Uncia uncia in the family Felidae.

Geographic Range:

- Snow leopards live across a vast area in northern and central Asia"s high mountains, including the Himalayan region.
- In the Himalayas, they live in high alpine areas, mostly above the tree line and up to 18,000 feet in elevation.
- They are found in 12 countries, including China, Bhutan, Nepal, India, Pakistan, Russia, and Mongolia.
- In India, it is seen in Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh.

Features:

- Measuring from nose to tail, the length of an average adult is 1000 to 1300 mm.
- They have thick grey and yellow-tinged fur, with solid spots on their head, neck, and lower limbs and rosettes over the rest of the body.
- They also have very long, thick tails that they use for balancing on rocks and wrapping around their bodies for protection from the cold.

- They are solitary, and the only prolonged social contact occurs while females are raising their cubs.
- **Conservation status:**
- IUCN Red List: Vulnerable
- CITES: Appendix I
- Wildlife (Protection) Act 1972: Schedule I

INTERNATIONAL RELATION

India starts four-year term as UN Statistical Commission member

- UN Statistical Commission was established in 1947 and is the highest body of the global statistical system.
- It brings together the Chief Statisticians from member states from around the world.

Functions:

- It is the highest decision-making body for international statistical activities, responsible for setting statistical standards and the development of concepts and methods, including their implementation at the national and international levels.
- The Statistical Commission oversees the work of the United Nations Statistics Division (UNSD), and it is a Functional Commission of the UN Economic and Social Council.

Membership:

- The Commission consists of 24 member countries of the United Nations elected by the United Nations Economic and Social Council based on an equitable geographical distribution according to the following pattern:
- Five members from African States
- Four members from Asia-Pacific States
- Four members from Eastern European States

- Four members from Latin American and Caribbean States
- Seven members from Western European and other States

Term:

- The term of office of members is four years.
- India was a member of the Statistical Commission last in 2004 and the country is returning to the UN agency after a gap of two decades.

Headquarter: New York

South Africa files genocide case against Israel at ICJ: Why the African nation supports Gaza so strongly

- South Africa moved the International Court of Justice (ICJ), for an urgent order declaring that Israel was in breach of its obligations under the 1948 Genocide Convention.
- The term 'genocide' is often loosely used when speaking of attacks against various communities across the world.
- It has been defined using set criteria in the UN's Convention on the Prevention and Punishment of the Crime of Genocide, moved in the General Assembly in 1948.
- It says, "In the present Convention, genocide means any of the following acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group, as such Killing members of the group; Causing serious bodily or mental harm to members of the group; Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part; Imposing measures intended to prevent births within the group; Forcibly transferring children of the group to another group.
- As per this convention the genocide is a crime whether committed during wartime or peacetime.
- India ratified the convention in 1959; there is no legislation on the subject.

Key facts about the International Court of Justice

- It is the principal judicial organ of the UN established in June 1945 by the Charter of the United Nations.
- French and English are the official languages of the Court.

Powers and Functions:

- The Court may entertain two types of cases: legal disputes between States submitted to it by them (contentious cases) and requests for advisory opinions on legal questions referred to it by United Nations organs and specialized agencies (advisory proceedings).
- Advisory proceedings before the Court are only open to five organs of the United Nations and 16 specialized agencies of the United Nations family or affiliated organizations.
- The court''s judgments in contentious cases are final and binding on the parties to a case and without appeal.
- Unlike the Court's judgments, advisory opinions are not binding.

Composition:

- It is composed of 15 judges, all from different countries, who are elected for terms of office of nine years by the United Nations General Assembly (UNGA) and the Security Council (UNSC).
- A candidate must receive an absolute majority of the votes in both UNGA and UNSC.
- One-third of the composition of the Court is renewed every three years.
- Once elected, a member of the Court is a delegate neither of the government of his own country nor of any other State.

At NAM Summit, Jaishankar highlights India as Vishwa Mitra

- The 19th Non-Aligned Movement (NAM) summit was held in Kampala, the capital of Uganda on 19 and 20 January.

- The 19th NAM Summit was held under Uganda"s leadership in Kampala. Uganda has taken over as chair from Azerbaijan, to run until 2027.
- Theme: 'Deepening Cooperation for Shared Global Affluence.'
- After the United Nations, NAM is the second-largest grouping of nations.
- NAM does not have a permanent secretariat or a formal founding charter, act, or treaty
- The summit usually takes place every three years.

Key discussions at the summit:

- Israel-Hamas war
- India's "Vishwaa Mitra" initiative
- A call for multipolar world

About Non-Aligned Movement:

- The Non-Aligned Movement (NAM) is an alliance of developing nations that refuses to identify with any major superpower.
- It was established in 1961 at the height of the Cold War. Whereas it started with the Bandung Conference held in Indonesia in 1955.

Current members:

- 120 countries: 53 from Africa, 39 from Asia, 26 from Latin America and the Caribbean and two from Europe.
- It also includes the non-UN member state of Palestine, 17 other observer countries, and 10 observer organizations.
- India is one of the founding members.

Houthis escalate attacks on Red Sea as missile strike hits British fuel tanker in Gulf of Aden

- Yemen's Iran-aligned Houthis have stepped up their attacks on commercial vessels transiting the Red Sea.

- The Houthis, officially known as Ansar Allah (Partisans of God), are an armed religious and political movement in Yemen.
- Houthis are Zaydi Shiites, or Zaydiyyah. Shiite Muslims are the minority community in the Islamic world, and Zaydis are a minority of Shiites, significantly different in doctrine and beliefs from the Shiites who dominate in Iran, Iraq, and elsewhere.
- They are a minority in Yemen, which is predominantly Sunni Muslim, but they are a significant one, numbering in the hundreds of thousands and making up as much as a third of the overall population.
- Its members advocate regional autonomy for Zaidis in northern Yemen.
- They have been fighting Yemen's Sunni-majority government since 2004.
- The Houthis took over the Yemeni capital Sanaa in September 2014 and seized control over much of north Yemen by 2016.
- The Houthi movement began as an effort to maintain tribal autonomy in northern Yemen and protest Western influence in the Middle East.
- Today, the Houthis seek a greater role in the Yemeni government and continue to advocate for Zaidi minority interests.
- The movement is known for its virulently anti-American and anti-Semitic rhetoric.
- Several of the group's leaders have been designated as terrorists by the United States.

International Court of Justice refuses to dismiss genocide case against Israel

- The International Court of Justice (ICJ) ruled that it will not throw away the genocide case against Israel.
- The ICJ, also known as the World Court, is the principal judicial organ of the United Nations (UN).
- It was established in June 1945 by the Charter of the UN and began work in April 1946.

- The seat of the Court is at the Peace Palace in The Hague (Netherlands).
- The hearings of the ICJ are always public.
- Official Languages: French and English

Powers and Functions: The Court may entertain two types of cases:

- First, it can act as a dispute settlement body between two member States in what are called "contentious cases." Such disputes may concern, in particular, land frontiers, maritime boundaries, territorial sovereignty, the non-use of force, violation of international humanitarian law, non-interference in the internal affairs of States and diplomatic relations.
- Second, it can accept requests to issue an advisory opinion on a legal question referred to it by a UN body or specialised agency. These opinions can clarify the ways in which such organisations may lawfully function or strengthen their authority in relation to their member States.
- The court''s judgments in contentious cases are final and binding on the parties to a case, and without appeal.
- Unlike the Court's judgments, advisory opinions are not binding.
- The ICJ decides disputes in accordance with international law as reflected in international conventions, international custom, general principles of law recognized by civilised nations, judicial decisions, and the writings of the most highly qualified experts on international law.

Composition:

- It consists of 15 judges, all from different countries, who are elected to nine-year terms by majority votes in the UN General Assembly and the Security Council.
- The judges, one-third of whom are elected every three years.
- Once elected, a member of the Court is a delegate neither of the government of his own country nor of any other State.

- In addition, the ICJ Statute allows a state party to a case before it which does not have a judge of its nationality on the bench to appoint a person to sit as judge ad hoc in that specific case.
- The Court is assisted by a Registry, its permanent administrative secretariat, which is independent of the United Nations Secretariat.

Reconsidering the free movement regime

- The Home Minister recently said the Free Movement Regime (FMR) agreement with Myanmar would be reconsidered to stop border residents from moving into each other's country without any paperwork.
- Under the FMR, all the hill tribes, whether they are citizens of India or Myanmar, can travel within 16 km on either side of the Indo-Myanmar Border (IMB).
- They can cross the border by producing a border pass with a one-year validity issued by the competent authority and can stay up to two weeks per visit.
- The FMR was implemented in 2018 as part of the Central government's Act East policy.
- FMR is implemented by both governments for the people living along the IMB.
- This helps locals get more culturally assimilated with trans-border villages through weddings, celebrating common festivals together, and trans-border trade.
- It is a reflection of the physical, ethnic, linguistic, cultural, and fraternal linkages among the trans-border villagers.

Key Facts about Indo-Myanmar Border (IMB):

- It runs for 1,643 km in the four states of Mizoram, Manipur, Nagaland, and Arunachal Pradesh.
- It runs from the tripoint with China in the north to the tripoint with Bangladesh in the south.
- Assam Rifles is tasked with guarding the IMB.

NHPC pledges to invest Rs 4,000 crore in 750 MW Kuppa Hydro Storage Project in Gujarat

- NHPC Limited (formerly known as National Hydroelectric Power Corp.) is a Government of India Mini Ratna Category-I Public Sector Enterprise under the Ministry of Power.
- It was incorporated in the year 1975 under the Companies Act, 1956, with the objective of developing hydroelectric power in the country.
- With an authorised share capital of Rs.15,000 crore. NHPC is a premier organisation in the country for the development of hydropower.
- The company is mandated to plan, promote, and organise an integrated and efficient development of power in all aspects through conventional and non-conventional sources in India and abroad.
- NHPC is headquartered in Faridabad, Haryana.
- The main functions of the NHPC include Planning, execution, operation, and maintenance of hydroelectric power projects; Exploring new sites for hydroelectric projects; Development of small hydroelectric projects; Research and Development (R&D) in the field of hydroelectric power
- Through long-term power purchase agreements, it sells electricity to utilities owned by state governments/private distribution companies on a wholesale basis.
- It also carries out business operations, which include the planning of wind and tidal wave projects in the country, and has interests in various projects in the construction and under development phases.

POLITY

SC's translation projects raced ahead in 2023

- The Supreme Court of India's monumental project of translating all of its 36,000 judgments into Scheduled Languages achieved unprecedented speed in 2023, with the E-SCR portal starting with just 2,238 translated judgements as of January and ending the year with over 31,000 rulings translated.
- e-SCR portal is an initiative to provide the digital version of the apex court''s judgements in the manner as they are reported in the official law report.
- The Supreme Court has developed a search engine with the help of the National Informatics Centre.
- It is comprising elastic search technique in the database of e-SCR and the search facility in e-SCR provides for free text search, search within search, case type and case year search, judge search, year and volume search and bench strength search options.
- It will provide free access to its about 34,000 judgements to lawyers, law students and the common public.
- These verdicts will be available on the apex court website, its mobile app and on the judgment portal of the National Judicial Data Grid (NJDG).

Key facts about National Judicial Data Grid

- It is a national repository of data relating to cases instituted, pending, and disposed of by the courts across the length and breadth of the country.
- It has been developed by National Informatics Centre (NIC) in close coordination with the in-house software development team of the Computer Cell, Registry with an interactive interface and analytics dashboard.
- The entire database shall be periodically updated on the NJDG portal.

- Through this one may access case related information, statistics such as institution, pendency and disposal of cases, case-types, year-wise break-up of the Supreme Court of India.

Truckers End Stir After Centre Says "Hit-And-Run Law Decision After Talks"

- The countrywide truckers" stir has been called off recently as the government assured that it would consult stakeholders before implementing a contentious law against hit-and-run.
- As per the Bharatiya Nyay Sanhita (BNS), which is a replacement for the British-era Indian Penal Code (IPC), if a driver causes a serious road accident due to careless driving and then leaves without informing the police or any official, they could be punished with up to 10 years in jail and a fine of Rs 7 lakh.
- BNS has established two distinct categories under the umbrella of "causing death by negligence."
- The first category addresses causing death through any rash or negligent act that does not amount to culpable homicide.
- Offenders in this category may face imprisonment for up to five years and a fine.
- The second category deals with causing death through rash and negligent driving, not amounting to culpable homicide.
- If the individual escapes without promptly reporting the incident to a police officer or magistrate, they could be subjected to up to 10 years of imprisonment and a fine.

What was the hit-and-run law before?

- The old, British-era IPC did not have a specific provision for hit-and-run cases.
- Actions in such cases were taken under Section 304 A of the IPC.
- As per this section, an individual causing the death of another due to a reckless or negligent act could face a maximum jail term of two years or a fine.

- All cases of hit-and-run, along with other forms of activities that came under the ambit of causing death by a "rash and negligent act" were lodged under Section 304A of the IPC.

Why telcos are asking govt to auction direct-to-mobile services spectrum?

- Indian telecom operators have asked the government to auction the spectrum that will be used for direct-to-mobile (D2M) technology services.
- The science behind D2M is similar to that of an FM radio, where a receiver within the device can tap into different radio frequencies.
- This new-age technology is a combination of broadband and broadcast that uses mobile phones to capture territorial digital TV signals.
- Using D2M, multimedia content, including live TV matches, can be streamed to phones directly without using the internet.

D2M can ensure

- Emergency alerts are delivered directly, reliably and without dependence on internet/cellular networks.
- Disaster Management audio content is delivered directly and authentically in a targeted manner.
- With D2M, governments can broadcast citizen-centric information.
- This approach benefits consumers by reducing their reliance on internet data consumption for staying informed and entertained.

Challenges involved

- It is still in the development stage.
- The biggest challenge in front of the government is to bring different stakeholders, including telecommunications, on board in launching D2M tech on a wide scale.

Quality Council of India and KVIC sign pact to enhance quality of khadi products

- The Quality Council of India (QCI) and Khadi and Village Industries Commission (KVIC) signed an initial pact to enhance the quality of the latter''s products, train artisans, and introduce ''Made in India'' label for Khadi.
- KVIC is a statutory body established under the Khadi and Village Industries Commission Act of 1956.
- It is an apex organization under the Ministry of Micro, Small, and Medium Enterprises, with regard to khadi and village industries within India.
- The KVIC is charged with the planning, promotion, organisation and implementation of programmes for the development of Khadi and other village industries in rural areas in coordination with other agencies engaged in rural development wherever necessary.

The functions of the KVIC are as follows:

- To build a strategic reserve of raw materials and implements for supply to producers.
- To create common service facilities for processing raw materials as semi-finished goods and provisions for facilities for marketing KVI products.
- To enhance the sale and marketing of Khadi and other products of village industries or handicrafts.
- To be responsible for encouraging and promoting research in the production techniques and equipment employed in the Khadi and Village Industries sectors.
- To provide financial assistance to institutions and individuals for developing and guiding the Khadi and Village industries through the supply of designs, prototypes, and other technical information.
- To assure the genuineness of the products and to set standards for the quality of products from Khadi and Village Industries.
- At the state level, Khadi & Village Industries Boards were set up to effectively implement the schemes of KVIC in their respective states.

The following are the schemes covered under the KVIC:

- Prime Minister's Employment Generation Programme (PMEGP)
- Market Promotion Development Assistance (MPDA)
- Interest Subsidy Eligibility Certificate (ISEC)
- Workshed Scheme for Khadi Artisans
- Strengthening the infrastructure of existing weak Khadi institutions and assistance for marketing infrastructure
- Khadi Reform and Development Programme (KRDP)
- Scheme of Fund for Regeneration of Traditional Industries (SFURTI)
- Honey Mission

'SMART 2.0' launched for Ayurveda Teaching Professionals

- The Central Council for Research in Ayurvedic Sciences (CCRAS) along with National Commission for Indian System of Medicine (NCISM) has launched "SMART 2.0" program.
- Scope for Mainstreaming Ayurveda Research among Teaching professionals (SMART) program promotes robust clinical studies in priority areas of Ayurveda with Ayurveda academic institutions/hospitals across the country through mutual collaboration.
- The objective of 'SMART 2.0' is to generate a tangible evidence to demonstrate efficacy and safety of Ayurveda interventions using interdisciplinary research methods and translating it into public health care.
- The study aims at safety, tolerability and adherence to Ayurveda formulations in the priority research areas of Bal Kasa, malnutrition, insufficient lactation, Abnormal Uterine Bleeding, Osteoporosis in post-menopausal women and Diabetes Mellitus (DM) II.

What is CCRAS?

- It is an autonomous body of the Ministry of AYUSH (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy), Government of India.

- It is an apex body in India for the formulation, coordination, development and promotion of research on scientific lines in Ayurveda and Sowa-Rigpa system of medicine.

Key facts about National Commission for Indian System of Medicine

- It is the statutory body constituted under NCISM Act, 2020. An Act to provide for a medical education system that improves access to quality and affordable medical education, ensures availability of adequate and high quality medical professionals of Indian System of Medicine in all parts of the country.
- Composition: It consists of 29 members, appointed by the central government. A Search Committee will recommend names to the central government for the post of Chairperson, part time members, and presidents of the four autonomous boards set up under the NCISM.

Functions

- Framing policies for regulating medical institutions and medical professionals of Indian System of Medicine
- Assessing the requirements of healthcare related human resources and infrastructure.
- Ensuring compliance by the State Medical Councils of Indian System of Medicine of the regulations made under the Bill
- Ensuring coordination among the autonomous boards.

PM inaugurates Kochi-Lakshadweep Islands Submarine Optical Fibre Connection

- The Prime Minister of India in Kavaratti, Lakshadweep, inaugurated Kochi-Lakshadweep islands submarine optical fiber connection (KLI-SOFC) project.
- Kochi-Lakshadweep islands submarine optical fiber connection project is the submarine cable connectivity project from Mainland (Kochi) to eleven Lakshadweep Islands namely, Kavaratti, Agatti, Amini, Kadmat, Chetlet, Kalpeni, Minicoy, Androth, Kiltan, Bangaram and Bitra has been extended.

- The project is funded by Universal Services Obligation Fund (USOF), Department of Telecommunication.
- Bharat Sanchar Nigam Limited (BSNL) was the Project Executing Agency and the work was awarded to M/s NEC Corporation India Pvt Ltd through Global Open Tendering process.
- The major activities related to the project include Marine Route Survey, Submarine Cable laying, Civil Construction of CLS stations, Installation, Testing and Commissioning of End Terminals (SLTE).

Significance of the project

- The KLI-SOFC project will lead to an increase in internet speed unlocking new possibilities & opportunities.
- For the first time since independence, Lakshadweep will be connected through Submarine Optic Fibre Cable.
- The dedicated submarine OFC will ensure a paradigm shift in communication infrastructure in the Lakshadweep islands, enabling faster and more reliable internet services, telemedicine, e-governance, educational initiatives, digital banking, digital currency usage, digital literacy etc.

NAREDCO plans event to showcase real estate opportunities in Ayodhya

- Real estate body NAREDCO recently said it plans to organise a builders'' conference in Ayodhya to tap its commercial and residential opportunities.
- National Real Estate Development Council (NAREDCO) was established in 1998 under the Ministry of Housing and Urban Affairs of the Government of India.
- It is the leading industry association for the real estate sector in the country.
- Its primary objective is to provide a legitimate platform for the government, the real estate industry, and the general public to address their concerns and find effective solutions to the challenges faced by the real estate sector.

- NAREDCO"s mission is to improve the real estate industry"s building, construction, and marketing standards.
- It contributes to the development of national fiscal policies and acts as a catalyst for economic growth in the Indian real estate sector.
- All major national developers and public sector organisations in the fields of housing and real estate development, finance, and marketing are members of NAREDCO.

Structure:

- The organisational structure of NAREDCO includes National, State, and City Councils.
- The councils ensure that the policy recommendations accurately reflect the real conditions on the ground and cover the entire geography.
- The National Council focuses on macro-level issues, the State Councils address state-level concerns, and the City Councils tackle local and on-ground issues.
- The Union Minister for Housing and Urban Affairs, Govt. of India, serves as the Chief Patron of NAREDCO.

Supreme Court dismisses plea seeking to declare Netaji as 'son of the nation'

- Leaders like Netaji Subhas Chandra Bose are "immortal" and do not need bestowing of a recognition through a judicial diktat.
- Netaji Subhas Chandra Bose was an Indian nationalist leader who was a key figure in the Indian independence movement against British colonial rule.
- He was born on January 23, 1897, in Cuttack, Bengal (now Orissa.)
- In 1920, he passed the civil service examination, but in April 1921, after hearing of the nationalist turmoil in India, he resigned from his position.
- Bose then joined the Indian National Congress and actively participated in the Indian independence movement.

- Bose at first worked with C.R. Das in Bengal, under whose mentorship he flowered.
- He was a close associate of Mahatma Gandhi and Jawaharlal Nehru.
- Bose was elected president of the Indian National Congress for two consecutive terms but resigned from the post following ideological conflicts with Mahatma Gandhi.
- In 1939, he formed the Forward Bloc, an organization aimed at unifying all the anti-British forces in India.
- Netaji was strongly influenced by Swami Vivekananda's teaching and was known for his patriotic zeal as a student.
- At the outset of the Second World War, he fled from India and traveled to the Soviet Union, Germany and Japan, seeking an alliance with the aim of attacking the British in India.
- With Japanese assistance, he reorganized and later led the Indian National Army, formed from Indian prisoners-of-war and plantation workers from Malaya, Singapore, and other parts of Southeast Asia, against British forces.
- With Japanese monetary, political, diplomatic, and military assistance, he formed the Azad Hind Government in exile, and regrouped, and led the Indian National Army in battle against the allies at Imphal and in Burma.

Justice Gavai nominated as SC Legal Services Committee Chairman: What law says on free legal aid in India

- Supreme Court Legal Services Committee was constituted under Section 3A of the Legal Services Authorities Act, 1987.
- It was to provide "free and competent legal services to the weaker sections of society", in cases falling under the top court's jurisdiction.
- Section 3A of the Act states that the Central Authority (the National Legal Services Authority or NALSA) shall constitute the committee.

  Composition:

- It consists of a sitting SC judge, who is the chairman, along with other members possessing the experience and qualifications prescribed by the Centre.
- Both the Chairman and other members will be nominated by the Chief Justice of India (CJI). Further, the CJI can appoint the Secretary to the Committee.
- The Committee, in turn, can appoint officers and other employees as prescribed by the Centre, in consultation with the CJI.
- Rule 10 of the NALSA Rules, 1995, entails the numbers, experience, and qualifications of the SCLSC members.
- Under Section 27 of the 1987 Act, the Centre is empowered to make rules in consultation with the CJI, by notification, to carry out the provisions of the Act.

Key facts about Legal Service Authorities Act

- It was enacted to give a statutory base to legal aid programmes.
- It aims to provide free and competent legal services to eligible groups, including women, children, SC/ST and EWS categories, industrial workers, disabled persons, and others.
- NALSA: Under the Act, NALSA was constituted in 1995 to monitor and evaluate the implementation of legal aid programmes and to lay down policies for making legal services available.
- State Legal Services Authorities (SLSA) were established to implement NALSA's policies and directions, give free legal services to people, and conduct Lok Adalats.
- An SLSA is headed by the Chief Justice of the respective High Court and includes the senior HC judge as its Executive Chairman.
- District Legal Services Authorities (DLSAs) and Taluk Legal Services Committees were established in districts and most taluks. Situated in the District Courts Complex in every district, each DLSA is chaired by the District Judge of the respective district.
- The Taluka or Sub-Divisional Legal Services Committees are headed by a senior civil judge.

Launch of the Traditional Medicine Morbidity codes of Ayurveda, Siddha and Unani Chapter in International Classification of Diseases (ICD) 11 as Module 2

- World Health Organization's International Classification of Diseases (ICD) 11 TM Module 2, Morbidity Codes launch event will be held in New Delhi on 10th January, 2024.
- International Classification of Diseases is developed by the World Health Organization (WHO) to classify diseases internationally.
- The global data on diseases currently available is mainly based on healthcare practices to be diagnosed through modern biomedicine.
- It serves a broad range of uses globally and provides critical knowledge on the extent, causes and consequences of human disease and death worldwide via data that is reported and coded with the ICD.
- Clinical terms coded with ICD are the main basis for health recording and statistics on disease in primary, secondary and tertiary care, as well as on cause of death certificates.
- These data and statistics support payment systems, service planning, and administration of quality and safety, and health services research.
- Diagnostic guidance linked to categories of ICD also standardised data collection and enables large scale research.
- The classification of data and terminology relating to diseases based on Ayush systems such as Ayurveda, Siddha, Unani etc. is not yet included in the WHO ICD series.
- Central Bureau of Health Intelligence (CBHI) is an agency under the Ministry of Health and Family Welfare that serves as the WHO Collaboration Centre for ICD-related activities.
- It facilitates the collection and dissemination of data on various diseases and mortality.

TM2 module of ICD11

- The Ministry of Ayush has developed the Code for Ayurveda, Siddha, and Unani Medicine through the National Ayush Morbidity and Standardised Electronic Portal (NAMASTE).
- The Ministry of Ayush in collaboration with WHO has prepared a categorization of data and terminology related to diseases based on Ayush - Ayurveda, Siddha, and Unani systems under TM2 module of ICD11 series.
- The Ministry of AYUSH has also signed a Donor Agreement with the World Health Organization for the same.

SC: Article 30 on minority institutes not intended to ghettoise communities

- The Supreme Court attempted to strike a balance by remarking that the intent of Article 30 of the Constitution was not to ghettoise minorities by insisting they had the upper hand in administration of the institution.
- Article 30 is one of the many provisions that ensure the preservation of minority rights.
- Article 30 of the Indian Constitution states the right of minorities to establish and administer educational institutions.
- It says: "All minorities, whether based on religion or language, shall have the right to establish and administer educational institutions of their choice."

Features:

- It consists of provisions that safeguard various rights of the minority community in the country, keeping in mind the principle of equality as well.
- Article 30 (1) says that all minorities, whether based on religion or language, shall have the right to establish and administer educational institutions of their choice.
- The right is provided by this clause on two types of minorities, namely, religious and linguistic minorities.

- Article 30 (1A) deals with the fixation of the amount for the acquisition of property of any educational institution established by minority groups.
- Article 30 (2) states that the government should not discriminate against any educational institution on the ground that it is under the management of a minority, whether based on religion or language, while giving aid.

Concept of Minorities:

- The Constitution of India uses the word minority but does not define it.
- Article 29 of the Indian Constitution uses the word 'minorities' in its marginal heading, but it speaks about "any section of the citizens inhabiting the territory of India or any part of the country should have the right to protect their language or script or culture, which is different and varied.
- It also says that citizens should be allowed to take admission in any educational institution which is maintained by the State or getting help from State funds whether they vary in religion, race, caste, language, or any of them.
- Article 30 of the Constitution of India talks only about religious and linguistic minorities.

Religious Minority:

- The basic ground for a community to be nominated as a religious minority is the numerical strength of the community.
- Section 2, clause (c) of the National Commission of Minorities Act, declares six communities as minority communities. They are Muslims, Christians, Buddhists, Sikhs, Jains and Zoroastrians (Parsis)

Linguistic Minorities:

- Class or group of people whose mother language or mother tongue is different from that of the majority groups is known as the linguistic minorities.
- Article 350-A of the Indian Constitution imposes an obligation on the states to try to provide enough facilities for instruction in the mother language at the primary level of education to children belonging to the linguistic minority community.

CBSE Issues Instructions For Private Schools Joining 2023-24 SC Student Scheme

- The Central Board of Secondary Education (CBSE) issued instructions for Residential Private Schools interested in joining SHRESHTA Scheme.
- Scheme for Residential Education for Students in High Schools in Targeted Areas (SHRESHTA) scheme aims to provide access to the best private residential schools for meritorious students from Scheduled Caste (SC) communities.
- It will provide scholarships to meritorious students from SC communities to study in private and NGO-run residential schools for Classes 9-12.
- The scheme is expected to provide admissions to around 3,000 students in Classes 9 and 11 each year.
- The core objectives of the scheme are to enhance the reach of the development initiatives of the government and fill in the gap in service-deprived SC dominant areas in the education sector.
- The scheme will collaborate with voluntary organisations to provide an environment that can help create conditions for socio-economic upliftment and the overall development of the SC communities.
- Implementation agency: The Department of Social Justice and Empowerment, Ministry of Social Justice & Empowerment.

The scheme is being implemented in two modes.

- First, there are SHRESHTA schools, which consist of the best CBSE/ state board-affiliated private residential schools.
- Under SHRESHTA, outstanding students from SC communities, across states and UTs, will be selected annually through the National Entrance Test for SHRESHTA (NETS) and will be admitted to these schools for education in Classes 9 through 12.

- The schools that will be part of this scheme will be selected based on a performance score of above 75 percent pass rate in Class 10 and 12 board examinations over the past three years.
- The second mode is based on NGO and voluntary organisation-run schools and hostels. The institutions run by such organisations that run up to Class 12 will also be made part of the scheme.

Eligibility:

- Students whose annual parental income is less than Rs 2,50,000 and who belong to SC communities are eligible to participate in this scheme.
- Only those candidates who have passed or are appearing in Class VIII/X in the given academic session can apply for admission to Class IX/XI.
- The scheme will cover the tuition fee, the hostel fee, and the mess fees for qualifying students.
- Students will also be allowed to choose from a range of schools based on their merit.

PM Modi Breaks Down At PMAY Event In Maharashtra, Says: "Wish I Had A Home Like This"

- The Prime Minister recently broke down in tears while addressing a crowd during an event to dedicate homes constructed under the Pradhan Mantri Awas Yojana-Urban Scheme (PMAY-U).
- PMAY-U, being implemented since June 2015, is one of the major flagship programmes being implemented by the Government of India under the Ministry of Housing and Urban Affairs (MoHUA).
- Objective: To provide all weather pucca houses to all eligible beneficiaries in the urban areas of the country by the year 2022, through States/UTs/Central Nodal Agencies.

- The scheme covers the entire urban area of the country, i.e., all statutory towns as per Census 2011 and towns notified subsequently, including Notified Planning/ Development Areas.
- In August 2022, the Union Cabinet approved the continuation of PMAY-U up to 31st December 2024, with all verticals except CLSS, for the completion of already sanctioned houses till 31st March 2022.
- Funding: The credit linked subsidy component will be implemented as a Central Sector Scheme while other three components will be implemented as Centrally Sponsored Scheme (CSS).
- All houses under PMAY-U have basic amenities like toilet, water supply, electricity, and kitchen.
- The Mission promotes women empowerment by providing ownership of houses in the name of female member or in joint name.
- Preference has also been given to differently abled persons, senior citizens, SCs, STs, OBCs, Minority, single women, transgender and other weaker & vulnerable sections of the society.

The scheme is being implemented through four verticals:

- Beneficiary Led Construction/ Enhancement (BLC)
- Affordable Housing in Partnership (AHP)
- In-situ Slum Redevelopment (ISSR)
- Credit Linked Subsidy Scheme (CLSS).

Police think tank Bureau of Police Research and Development warns users of scams, data-breach acts on WhatsApp

- Bureau of Police Research and Development was set up in 1970 under the Ministry of Home Affairs by replacing the Police Research and Advisory Council.

Objectives

- To identify the needs and problems of the police in the country.

- To undertake research projects and studies, and suggest modalities to overcome problems and challenges and meet the needs and requirements of the police.
- It was also mandated to keep abreast of the latest developments in the fields of science and technology, both in India and abroad, with a view to promoting the use of appropriate technology in police work.
- It is also assisting the States in modernization of the State Police Forces and Correctional Administration.
- More recently, the BPR&D has also been entrusted with the responsibility of anchoring and coordinating the work of the National Police Mission.

14th National Voters' Day (NVD) to be celebrated on 25th January 2024

- Election Commission of India is celebrating 14th National Voters' Day (NVD) on 25th January 2024.
- National Voters' Day (NVD) has been celebrated on January 25 every year since 2011, across the country to mark the foundation day of the Election Commission of India, i.e. 25th January 1950.
- Purpose: The main purpose of the NVD celebration is to create electoral awareness amongst citizens and encourage them to participate in the electoral process.
- Dedicated to the voters of the country, the National Voters" Day is also used to facilitate enrolment of voters, especially the newly eligible young voters.
- New voters are felicitated and handed over their Elector Photo Identity Card (EPIC) in the NVD functions held across the country.
- NVD is celebrated at the national, state, district, constituency and polling booth levels, which makes it one of the largest celebrations in the country.
- NVD 2024 theme - 'Nothing Like Voting, I Vote For sure'
- On January 25, 2024, the Election Commission of India celebrates its 75th year of service to the Nation.

Key facts about the Election Commission of India:

- It is an autonomous and permanent constitutional body responsible for organising free and fair elections in India.
- The Constitution grants the ECI with the power of direction, superintendence, and control of elections to Parliament, state legislatures, the office of president of India, and the office of vice-president of India.
- It issues the Model Code of Conduct in elections for political parties and candidates so that no one indulges in unfair practice or there is no arbitrary abuse of powers by those in power.
- Composition: The commission consists of a Chief Election Commissioner (CEC) and two Election Commissioners (ECs).

Powers and responsibilities ECI:

- Determining the Electoral Constituencies' territorial areas throughout the country.
- Preparing and periodically revising electoral rolls and registering all eligible voters.
- Notifying the schedules and dates of elections and scrutinising nomination papers.
- Granting recognition to the various political parties and allocating them election symbols.
- The Commission also has advisory jurisdiction in the matter of post-election disqualification of sitting members of Parliament and State Legislatures.

Default Bail Can't Be Claimed On Ground That Investigation Is Pending Against Other Accused: Supreme Court Sets Aside Bail To Wadhwans In DHFL Case.

- The Supreme Court held that default bail cannot be claimed on the ground that the investigation is pending against other accused.

- The Code of Criminal Procedure (CrPC) provides for three kinds of bail. Section 438 provides for Anticipatory Bail; Section 439 provides for Regular bail whereas Section 167(2) provides for default/statutory bail.
- Default bail, also known as statutory bail, is a type of bail which accrues as a right to an accused detained in custody, when the police fail to or are unable to complete the investigation and file the chargesheet within the time frame stipulated under the law.
- When a person is arrested under any section of any act, there is an obligation on the arresting authority to complete the investigation within a specified time. This period is mandatory, and not obligatory.
- The statutory time frame for completing the investigation of offences under the IPC, and for filing of the charge sheet varies depending on the gravity of the offence.
- For offences punishable with imprisonment up to 10 years, the investigation must be completed within 60 days of arrest.
- For offences punishable with death, imprisonment for life, or imprisonment for more than 10 years, the investigation must be completed within 90 days of arrest (excluding investigation/arrests made under special statutes).
- Therefore, when a person is arrested and the police are not able to complete the investigation within the specified period, it is their default, and the arrested person cannot be kept behind bars beyond this period. This entitlement is called default bail.
- This is enshrined in Section 167(2) of the CrPC, where it is not possible for the police to complete an investigation in time.

Principles:

- It is a right, regardless of the nature of the crime.
- The stipulated period within which the charge sheet has to be filed begins from the day the accused is remanded for the first time.

- It includes days spent in both police and judicial custody, but not days spent in house-arrest.
- For an accused to be entitled to default bail, the accused must have been in custody during the entire statutory period for the investigation, and the accused must not have been released on bail during that period.
- A requirement for the grant of statutory bail is that the right should be claimed by the person in custody.
- If the charge sheet is not filed within the stipulated period, but there is no application for bail under Section 167(2), there is no automatic bail.
- Once the accused files an application for bail under Section 167(2), it is considered that he/she has enforced the right to be released on default bail.
- This right only comes into place after the stipulated time limit for investigation has expired.
- If the accused fails to apply for default bail after the investigation time period has expired and the investigating agency files a charge-sheet or seeks more time before the accused makes such an application for default bail, then the right to default bail is no longer applicable. The Magistrate can then grant further time for the completion of the investigation.
- However, the accused may still be released on bail under other legal provisions of the Code.
- The default bail is not liable to be cancelled even after the completion of the investigation and the submission of the charge sheet. The default bail can be cancelled only on the grounds and considerations on which a regular bail can be cancelled.

Mere Cheating Will Not Attract S.420 IPC Offence; Accused Must Dishonestly Induce Cheated Person To Deliver Property: Supreme Court

- The Supreme Court held that while prosecuting a person for the offence of cheating under Section 420 of the IPC, it is to be seen whether the deceitful act of cheating was coupled with an inducement leading to the parting of any property by the complainant.
- Section 420 of the Indian Penal Code (IPC), or IPC 420 as it is commonly known, deals with the act of cheating and dishonestly inducing the person deceived to deliver any property to any person, or to make, alter, or destroy the whole or any part of a valuable security, or anything which is signed or sealed and capable of being converted into a valuable security.
- Section 415 of the IPC defines the offence of cheating. In simpler terms, cheating is a dishonest act performed in order to gain some advantage out of it.
- Section 420 IPC is a serious form of cheating that includes inducement (to lead or move someone to happen) in terms of the delivery of property as well as valuable securities.
- This section is also applicable to matters where the destruction of property is caused by cheating or inducement.
- The person found guilty under this section shall be punished with imprisonment of either description for a term that may extend to seven years and shall also be liable to a fine.
- The offence is cognizable and non-bailable.
- The essential ingredients that go into the making of an offence under Section 420, IPC are:
- That the representation made by the accused was false;
- That the accused knew that the representation was false at the very time when he made it;
- That the accused made the false representation with the dishonest intention of deceiving the person to whom it was made; and

- That the accused thereby induced that person to deliver any property or to do or to omit to do something which he would otherwise not have done or omitted.

PM inaugurates Diamond Jubilee celebration of Supreme Court

- The Prime Minister inaugurated the Diamond Jubilee celebration of the Supreme Court.

History:

- The Supreme Court of India is the apex judicial body under the Constitution of India.
- Article 124 of the Constitution states that "There shall be a Supreme Court of India."
- The Supreme Court came into existence on January 26, 1950, with the coming into force of the Constitution.
- On January, 28, 1950, two days after India became a Sovereign Democratic Republic, the Supreme Court was inaugurated.
- The Supreme Court initially functioned from the old Parliament House till it moved to the present building located on Tilak Marg, New Delhi, in 1958.
- The first President of India, Dr. Rajendra Prasad, inaugurated the present building of the Supreme Court of India on August 4, 1958.

Number of Judges:

- The original Constitution of 1950 envisaged a Supreme Court with a Chief Justice and 7 puisne Judges, leaving it to Parliament to increase this number.
- Considering the increase in workload, Parliament increased the number of Judges from 8 in 1950 to 11 in 1956, 14 in 1960, 18 in 1978, 26 in 1986, 31 in 2009, and 34 in 2019 (current strength).
- Today, the judges sit in benches of two and three and come together in larger benches of 5 and more (Constitution Bench) to decide any conflicting decisions

between benches of the Supreme Court or any substantial questions concerning the interpretation of the Constitution.

- The proceedings of the Supreme Court are conducted in English.

Powers and Functions:

- The Supreme Court has original, appellate, and advisory jurisdiction.
- It serves both as the final court of appeals and the final interpreter of the Constitution.
- Its exclusive original jurisdiction extends to any dispute between the Government of India and one or more States or between the Government of India and any State or States on one side and one or more States on the other, or between two or more States, if and insofar as the dispute involves any question (whether of law or fact) on which the existence or extent of a legal right depends.
- In addition, Article 32 of the Constitution gives extensive original jurisdiction to the Supreme Court for the enforcement of Fundamental Rights.
- It is empowered to issue directions, orders, or writs, including writs in the nature of habeas corpus, mandamus, prohibition, quo warranto, and certiorari, to enforce them.
- The Supreme Court has been conferred with the power to direct the transfer of any civil or criminal case from one High Court to another High Court or from a Court subordinate to another High Court.
- Under the Arbitration and Conciliation Act, 1996, International Commercial Arbitration can also be initiated in the Supreme Court.
- The appellate jurisdiction of the Supreme Court can be invoked by a certificate granted by the High Court concerned under Article 132(1), 133(1) or 134 of the Constitution in respect of any judgement, decree, or final order of a High Court in both civil and criminal cases, involving substantial question of law as to the interpretation of the Constitution.

- Appeals also lie to the Supreme Court in civil matters if the High Court concerned certifies:
- that the case involves a substantial question of law of general importance, and
- that, in the opinion of the High Court, the said question needs to be decided by the Supreme Court.
- In criminal cases, an appeal lies to the Supreme Court if the High Court
- has on appeal reversed an order of acquittal of an accused person and sentenced him to death or to imprisonment for life or for a period of not less than 10 years, or
- has withdrawn for trial before itself any case from any Court subordinate to its authority and has in such trial convicted the accused and sentenced him to death or to imprisonment for life or for a period of not less than 10 years, or
- certified that the case is a fit one for appeal to the Supreme Court.
- Parliament is authorised to confer on the Supreme Court any further powers to entertain and hear appeals from any judgement, final order or sentence in a criminal proceeding of a High Court.
- The Supreme Court also has a very wide appellate jurisdiction over all Courts and Tribunals in India in as much as it may, in its discretion, grant special leave to appeal under Article 136 of the Constitution from any judgement, decree, determination, sentence or order in any cause or matter passed or made by any Court or Tribunal in the territory of India.
- The Supreme Court has special advisory jurisdiction in matters which may specifically be referred to it by the President of India under Article 143 of the Constitution.
- Election Petitions under Part III of the Presidential and Vice-Presidential Elections Act, 1952, are also filed directly in the Supreme Court.

- Under Articles 129 and 142 of the Constitution, the Supreme Court has been vested with power to punish for contempt of Court, including the power to punish for contempt of itself.
- The Supreme Court can reconsider its final judgement or order by way of a curative petition on limited grounds after the dismissal of the review petition.
- As the highest court in India, the Supreme Court's judgments are binding on all other courts in the country.

SCIENCE AND TECHNOLOGY

What is radiocarbon dating?

- The technique called radiocarbon dating brought the first verifiable way to do this to many fields of science, transforming them – and our world – to a significant degree.
- Radiocarbon dating is a method by which the age of an object can be determined. Radiocarbon dating refers to a method that does this using radiocarbon, a name for the isotope carbon-14.

How does Carbon-14 form?

- It is created in the earth's atmosphere when cosmic rays– energetic streams of charged particles coming from sources in outer space – slam into the atoms of the gases and release neutrons.
- When these neutrons interact with the nitrogen-14 isotope, they can produce carbon-14.
- Since cosmic rays are ceaselessly passing through the earth's atmosphere, carbon-14 is created constantly there.
- It readily combines with atmospheric oxygen to form radioactive carbon dioxide.
- This compound then enters the bodies of plants (via photosynthesis), animals (when they consume plants), and other biomass through the carbon cycle.

- It is in the form of carbon dioxide and other carbon compounds, would have to be able to diffuse into the earth's various ecosystems such that the concentration of carbon-14 in the atmosphere was comparable to the concentration of carbon-14 in the planet's other biospheres.

How does radiocarbon dating work?

- When an organic entity – like the human body – is 'alive', it constantly exchanges carbon with its surroundings by breathing, consuming food, defecating, shedding skin, etc.
- Through these activities, carbon-14 is both lost from the body as well as replenished, so its concentration in the body is nearly constant and in equilibrium with its surroundings.
- When this individual dies, the body no longer performs these activities and the concentration of carbon-14 in the body begins to dwindle through radioactive decay.
- The more time passes, the more the amount of carbon-14 lost, and the less there will remain. This decay rate can be predicted from theory.
- Radiocarbon dating dates an object by measuring the amount of carbon-14 left, which scientists and/or computers can use to calculate how long ago the body expired.
- The modern radiocarbon dating setup is more sophisticated and one of the most sensitive dating setups uses accelerator mass spectrometry (AMS), which can work with organic samples as little as 50 mg.

Two-month-old becomes the youngest to get bone marrow transplant

- A two-month-old girl with bubble baby syndrome underwent bone marrow transplant (BMT)

- "Bubble baby syndrome," known medically as Severe Combined Immunodeficiency (SCID) is very rare genetic disorder that causes life-threatening problems with the immune system.
- It is a type of primary immune deficiency.
- The disease is known as "living in the bubble" syndrome because living in a normal environment can be fatal to a child who has it.

What happens in SCID?

- In a developing baby, the immune system starts in the bone marrow. Stem cells can become any of three different types of blood cells such as red blood cells, white blood cells, platelets
- White blood cells (WBCs) protect the body from infections and foreign invaders. There are different kinds of WBCs, including lymphocytes.
- Lymphocytes come in two main types: B-cells and T-cells. These cells are key to fighting infections. T cells identify, attack, and kill "invaders." B cells make antibodies that "remember" an infection and are ready in case the body is exposed to it again.
- SCID is a "combined" immunodeficiency because it affects both of these infection-fighting white blood cells.
- In SCID, the child's body has too few lymphocytes or lymphocytes that don't work properly.
- Because the immune system doesn't work as it should, it can be difficult or impossible for it to battle the germs—viruses, bacteria, and fungi—that cause infections.

Causes:

- Inherited mutations in more than a different genes cause SCID.
- This means one or both birth parents pass down the disease to their child.
- Symptoms: Babies with SCID may appear healthy at birth, but problems can start soon after, such as failure to thrive, chronic diarrhoea, frequent, often serious

respiratory infections, oral thrush (a type of yeast infection in the mouth), other bacterial, viral, or fungal infections that can be serious and hard to treat.

Treatment:

- SCID is a pediatric emergency. Without treatment, babies are not likely to survive past their first birthday.
- The most common treatment is a stem cell transplant (also called a bone marrow transplant). This means the child receives stem cells from a donor. The hope is that these new cells will rebuild the child''s immune system.

India to participate in the international mega science project SKA

- The Government of India has accorded its approval for India's participation in the international mega science project, Square Kilometer Array (SKA), at an estimated cost of 1250 Cr rupees.
- Square Kilometer Array Observatory is a state of the art, mega science international facility to build the world's biggest and most sensitive radio telescope for addressing a wide variety of cutting-edge science goals.
- The SKAO, collocated in Australia (SKA-Low) and South Africa (SKA-Mid) with operational headquarters in the UK, is expected to revolutionize radio astronomy, while driving the growth of many important new state-of-the-art technologies.
- Ten countries involved are - Australia, Canada, China, India, Italy, New Zealand, South Africa, Sweden, the Netherlands and UK.

India and SKAO

- Subsequent to this approval, India will be signing the SKAO treaty to become a full-fledged member of the SKA Observatory and thus join the growing list of countries participating in the project.
- This approval covers funding support for the construction phase of the international SKA Observatory (SKAO) spread over the next 7 years.

- The project will be jointly funded by the Department of Atomic Energy (DAE) and Department of Science and Technology (DST), with DAE as the lead agency.
- The Indian participation in SKA is a truly nationwide, inclusive project led by a consortium of more than 20 academic and research institutes (with NCRA-TIFR as the nodal institute).
- During the design phase of the SKA (2014-2020), India has contributed actively to the project, with a lead role in the successful design of the complex Telescope Manager system.
- In the subsequent early prototyping phase, India was actively engaged in three areas of work namely Telescope Manager package, SKA-Low digital hardware package and Science Data Processor work package.
- Participation in this project will open up possibilities for development of niche skills in Indian industry and research organizations in different areas of next generation technologies, such as modern antenna design, sophisticated cryogenic receiver systems, and high volume optical fibre data transport technology etc.

Researchers create a functional semiconductor made from graphene

- Graphene is a one-atom-thick layer of carbon atoms arranged in a hexagonal lattice.
- It is the building-block of Graphite (which is used, among other things, in pencil tips).
- It was first isolated in 2004.

Properties:

- Graphene is the world''s thinnest material; it is only one atom thick, one million times thinner than human hair.
- However, it is very strong, stronger than steel and diamond.
- It is an excellent conductor of heat and electricity. It conducts electricity better than copper.

- It is almost perfectly transparent, as it absorbs only 2% of light.
- It is impermeable to gases, even those as light as hydrogen and helium.

Applications:

- Mechanical strength: It can be used to enhance the strength of other materials.

Thermal applications:

- It is a great material for making heat-spreading solutions, such as heat sinks or heat dissipation films.
- This could be useful in both microelectronics (for example, to make LED lighting more efficient and longer-lasting) and in larger applications, for example, thermal foils for mobile devices.

Energy storage:

- Since graphene is the world's thinnest material, it also has an extremely high surface-area-to-volume ratio. This makes graphene a very promising material for use in batteries and supercapacitors.
- Graphene may enable batteries and supercapacitors(and even fuel cells) that can store more energy and charge faster, too.
- It has a lot of promise for additional applications: anti-corrosion coatings and paints, efficient and precise sensors, faster and more efficient electronics, flexible displays, efficient solar panels, faster DNA sequencing, drug delivery, and more.

IISER Bhopal Researchers develop material to break down chemical warfare agents like Mustard Gas

- Researchers at IISER Bhopal recently developed a new photocatalyst called UC-POP-Au, which absorbs the entire spectrum of light, making it a potent catalyst for chemical processes.
- The term photocatalyst is a combination of two words: photo, related to photon, and catalyst, which is a substance altering the reaction rate in its presence.

- Therefore, photocatalysts are materials that change the rate of a chemical reaction upon exposure to light. This phenomenon is known as photocatalysis.
- The illumination of the catalyst causes the generation of free charges (electrons and holes) that can participate in chemical reactions, altering the reaction rate.
- Photocatalysis includes reactions that take place by utilising light and a semiconductor. All the photocatalysts are basically semiconductors.
- There are various materials that show photocatalytic capability, and titanium dioxide (TiO2) is said to be the most effective.
- The photocatalytic reactions can be categorised into two types based on the appearance of the physical state of the reactants.
- Homogeneous photocatalysis: When both the semiconductor and reactant are in the same phase, e. gas, solid, or liquid.
- Heterogeneous photocatalysis: When both the semiconductor and reactant are in different phases.
- It is valuable for applications like air and water purification, self-cleaning surfaces, and even in some aspects of solar energy conversion.

Unlocking the secrets of disease-causing fungus Aspergillus fumigatus

- An international team of researchers recently unveiled ground-breaking findings on the fungus Aspergillus fumigatus, which can cause deadly disease in humans.
- Aspergillus fumigatus is a species of fungus that causes diseases in humans.
- It can be found throughout the environment, including in soil, plant matter, and household dust.
- The fungus can also produce airborne spores called conidia. Most people can inhale many of these spores on a daily basis.
- In a healthy individual, the immune system often clears them from the body without a problem. However, for some people, inhaling A. fumigatus, spores can lead to a potentially severe infection.

- Aspergillus fumigatus is considered an opportunistic organism. It has low virulence (ability to cause damage) and causes disease only in some circumstances, like:
- A severely weakened state caused by sickness, poor nutrition, advanced age, etc.
- Immunosuppression by diseases or medicines
- Implants use, such as prosthetic devices

Illness Caused:

- An infection that's caused by an Aspergillus species of fungus is referred to as aspergillosis.
- Aspergillus can cause allergic reactions, chronic lung conditions, and an invasive disease that spreads to your brain, kidneys, lungs, or other organs.

Symptoms:

- The symptoms of aspergillosis vary depending on the type and location of your body.
- Symptoms of infections or allergic reactions in your lungs are the most common. They include: Coughing (sometimes coughing up blood), Shortness of breath (dyspnea), Noisy breathing (wheezing), Chest pain, Fever.
- Fatigue and weight loss can be symptoms of chronic pulmonary aspergillosis.
- Treatment: Treatments include surgery and antifungal medications.

Cabinet approves Rs 4,797 crore PRITHVI scheme to boost earth science research

- To enhance the understanding of the Earth and its vital signs, the Union Cabinet recently approved the "PRITHvi VIgyan (PRITHVI)" scheme.
- PRITHVI Scheme is an initiative of the Ministry of Earth Sciences (MoES) to enhance the understanding of the Earth and its vital signs.
- This overarching initiative, with an allocation of Rs 4,797 crore for the period 2021-26, aims to significantly enhance research, modelling, and service delivery across crucial areas like weather, climate, oceans, and the polar regions.

The Prithvi scheme integrates five existing sub-schemes:

- Atmosphere and Climate Research-Modelling Observing Systems and Services (ACROSS)
- Ocean Services, Modelling Application, Resources and Technology (O-SMART)
- Polar Science and Cryosphere Research (PACER)
- Seismology and Geosciences (SAGE)
- Research, Education, Training, and Outreach (REACHOUT).
- These programs collectively aim to enhance our understanding of the Earth''s vital signs and translate scientific knowledge into practical services that benefit society, environment and economy.

Objectives:

- One of the primary objectives of Prithvi is to augment and sustain long-term observations across the atmosphere, ocean, geosphere, cryosphere, and solid earth.
- This will enable recording and monitoring of the Earth System''s vital signs and changes.
- Additionally, the scheme focuses on developing predictive models for weather, ocean, and climate hazards, as well as advancing the understanding of climate change science.
- Exploration of the polar regions and high seas is another key aspect, aiming at discovering new phenomena and resources.
- The scheme also emphasises the development of technology for the exploration and sustainable harnessing of oceanic resources for societal applications.
- Various components of the PRITHVI scheme are interdependent and are carried out in an integrated manner through the combined efforts of the concerned institutes under the MoES.

IISR develops new granular lime-based trichoderma bio-pesticide, fertiliser

- The Indian Institute of Spices Research (IISR) Kozhikode has successfully developed a new granular lime-based Trichoderma formulation.
- The formulation named 'Tricholime', integrates Trichoderma and lime into a single product, making the application easier for farmers.
- Trichoderma is a fungal biocontrol agent, has proven effective in suppressing several soil-borne plant pathogens and serves as a successful bio-pesticide and bio-fertilizer in crop production.
- Recognizing the importance of Trichoderma and the challenges posed by traditional lime applications, the scientists at IISR developed 'Tricholime' to integrate lime and Trichoderma.

Significance of Tricholime

- It can successfully eliminate the need for a time-consuming two-step process.
- This lime-based formulation neutralises the soil acidity while promoting plant growth and shields crops from soil-borne pathogens, all in a single application.
- This formulation also benefits the crop by improving the physical condition of the soil, enhancing secondary nutrient availability and by boosting soil microbial activity, he added.
- IISR hopes that the technology behind this product can also be extended to include other beneficial bio-agents, opening new possibilities in product development to support sustainable organic farming.

Scientists characterise a natural pathogenic fungi to help save eucalyptus forests from devastating pest

- Scientists have found a natural remedy to protect eucalyptus forest plantations from a pest, eucalyptus snout beetle, which is known to cause serious damage to eucalypts.
- Eucalyptus Snout Beetle is a leaf-feeding beetle that is a major defoliator of eucalypts.

- It is also known as eucalyptus weevil.
- The pest is indigenous to Australia but occurs in many countries throughout the world where eucalypts are grown.
- The beetle feeds on leaves, buds and shoots, resulting in stunted growth and deflation and causing heavy losses.
- It can cause damage over vast areas as it has a great flight capability and gets transferred with transport of forest products.
- The pest is mainly controlled with the help of micro-waspsAnaphes spp — an expensive solution.
- This led a team of scientists to look for naturally occurring pathogenic fungi to tackle the problem.

New research

- The scientists collected the fungi from naturally infected beetles, the pathogen can better adapt to the environmental conditions, making it efficient to control beetles in forest populations.
- The findings of the study showed that Beauveria bassiana was highly effective both by contact and ingestion, with a mortality rate of 100 per cent.
- The fungi could be used to develop a bio-pesticide for sustainable forestry using integrated pest management.
- The fungi could also be used in other countries where the insect is causing severe damage.

What are thylakoid membranes?

- Researchers at the University of Liège, Belgium have identified thylakoid microstructures in fossil cells that are 1.75 billion years old.
- Thylakoids are little pouches located in the chloroplasts of plants.
- They store chlorophyll, the substance in plants that reacts to sunlight and triggers photosynthesis.

- These membranes are dense, mostly galactolipid, protein-containing bilayers in which photosynthesis occurs in photosynthetic organisms.
- They are found in ancient, light-sensitive bacteria called cyanobacteria.
- The cyanobacteria multiplied in the oceans billions of years ago, and are believed to be responsible for the vast stores of oxygen that are found in the atmosphere and thus, a precursor to life.
- It is now believed that thylakoid membranes in cyanobacteria were what made them capable of using sunlight to create energy and release oxygen.

Key facts about Cyanobacteria

- These are also called blue-green algae, microscopic organisms found naturally in all types of water.
- These single-celled organisms live in fresh, brackish and marine water.
- These organisms use sunlight to make their own food.
- In warm, nutrient-rich (high in phosphorus and nitrogen) environments, cyanobacteria can multiply quickly, creating blooms that spread across the water's surface.
- Cyanobacteria blooms can form in warm, slow-moving waters that are rich in nutrients from sources such as fertiliser runoff or septic tank overflows.
- It needs nutrients to survive. The blooms can form at any time, but most often form in late summer or early fall.

How do flights land safely despite fog and low visibility? The wizardry tech that makes it possible!

- Thick mist which hampers flight operations, necessitating the reliance on instruments like the "Instrument Landing System" (ILS) to navigate through the obscured surroundings.

- Instrument Landing System is a ground-based radio navigation system that provides pilots with accurate information about their aircraft''s position and alignment with the runway.
- It comprises two main components, the localiser, and the glide slope.
- The localizer ensures lateral alignment, guiding the aircraft along the correct azimuth toward the runway centerline.
- Simultaneously, the glide slope provides vertical guidance, aiding pilots in maintaining the proper descent angle for a safe landing.
- It guides pilots along both horizontal and vertical axes, aiding them in maintaining the correct approach path during low-visibility conditions.
- With the help of ILS systems, pilots are able to understand how their aircraft is positioned with respect to an airport runway without needing to physically see it.
- This system warns pilots in case their jets are not flying to meet the runway''s centreline.
- It will also warn pilots in case their jets are too low or too high and thus, at the risk of undershooting or overshooting the runway.
- Both of these tasks performed by the Instrument Landing System are crucial in ensuring landing in cases where the pilots aren''t able to see the runway clearly.
- In addition to ILS, modern aircraft are equipped with advanced avionics and autopilot systems that enhance precision during foggy landings.
- These systems, often coupled with radar altimeters, help maintain a stable descent and ensure the aircraft follows the designated glide path with minimal reliance on external visibility.
- It is a standard International Civil Aviation Organisation (ICAO) precision landing aid that is used to provide accurate azimuth (angular measurement in a spherical coordinate system) and descent guidance signals for guidance to flight for landing on the runway under adverse weather conditions.

MNRE launches scheme to incentivise production of green hydrogen

- Rs 17,490 crore has been set aside for the Strategic Interventions for Green Hydrogen Transition (SIGHT) programme, to bolster domestic electrolyser manufacturing, green hydrogen production.
- SIGHT is a subcomponent of National Green Hydrogen Mission.
- Aim: To bolster domestic electrolyser manufacturing and green hydrogen production.
- In the initial stage, two distinct financial incentive mechanisms were proposed with an outlay of ₹ 17,490 crore up to 2029-30:
- Incentive for manufacturing of electrolysers
- Incentive for production of green hydrogen.
- Depending on the markets and technology development, specific incentive schemes and programmes will continue to evolve as the Mission progresses.
- Implementing agency: The Solar Energy Corporation of India (SECI) would be the implementing agency responsible for the scheme's execution.

What is the National Green Hydrogen Mission?

- It is implemented by the Ministry of New and Renewable Energy with an outlay of ₹ 19,744 crore from FY 2023–24 to FY 2029–
- The overarching objective of the Mission is to make India a global hub for the production, usage, and export of Green Hydrogen and its derivatives.
- The expected outcomes of the mission by 2030, are as follows:
- India's Green Hydrogen production capacity is likely to reach 5 MMT per annum, contributing to reduction in dependence on the import of fossil fuels. Achievement of Mission targets is expected to reduce a cumulative ₹ 1 lakh crore worth of fossil fuel imports by 2030.
- This is likely to leverage over ₹8 lakh crore in total investments and create over 6 lakh jobs.
- Nearly 50 MMT per annum of CO2 emissions are expected to be averted through the production and use of the targeted quantum of Green Hydrogen.

- It has a provision for supporting pilot projects for low-carbon steel, mobility, shipping, and ports.
- The Mission provides allocations for various sub-components of the Mission such as SIGHT, Pilot projects, R&D etc. to fund specific selected projects.
- There is no State-wise allocation made under the Mission.

Key Facts about Green Hydrogen:

- Green Hydrogen is produced by the process of electrolysis, where water is split into hydrogen and oxygen using electricity generated from renewable sources like solar, wind, or hydropower.
- This process results in a clean and emission-free fuel that has immense potential to replace fossil fuels and reduce carbon emissions.

India's first indigenously developed Hepatitis A vaccine launched in Hyderabad

- The Indian Immunologicals Ltd (IIL) a wholly owned subsidiary of National Dairy Development Board (NDDB) launched India's first indigenously developed Hepatitis A vaccine 'Havisure' in Hyderabad.
- Havisure vaccine is a two-dose vaccine — first dose administered at above 12 months of age and the second at least six months after the first dose.
- The vaccine is recommended for children as part of the routine immunisation as well as for individuals at risk of exposure or travel to the regions with high hepatitis A prevalence.
- In addition to this people with occupational risk of infection and suffering from chronic liver diseases also require Hepatitis A vaccination.

Key facts about Hepatitis A

- It is an inflammation of the liver caused by the hepatitis A virus (HAV).
- The virus is primarily spread when an uninfected (and unvaccinated) person ingests food or water that is contaminated with the faeces of an infected person.
- Hepatitis can be an acute (short-term) infection or a chronic (long-term) infection.

- There are different types of hepatitis, with different causes:
- Viral hepatitis is the most common type. It is caused by one of several viruses -- hepatitis viruses A, B, C, D, and E.
- Alcoholic hepatitis is caused by heavy alcohol use.
- Toxic hepatitis can be caused by certain poisons, chemicals, medicines, or supplements.
- Autoimmune hepatitis is a chronic type in which your body''s immune system attacks your liver. The cause is not known, but genetics and your environment may play a role.
- Hepatitis B, hepatitis C, and hepatitis D spread through contact with the blood of someone who has the disease.
- Hepatitis B and D may also spread through contact with other body fluids. This can happen in many ways, such as sharing drug needles or having unprotected sex.
- Symptoms: Some people with hepatitis do not have symptoms and do not know they are infected.
- Common symptoms include: fever, malaise, loss of appetite, diarrhoea, nausea, abdominal discomfort, dark-coloured urine and jaundice.
- Treatment: There is no specific treatment for hepatitis A. Recovery from symptoms following infection may be slow and can take several weeks or months.

FiloBot, a plant-inspired robot that shoots up like a vine plant

- A new innovative plant-inspired robot which is named FiloBot has been developed that climbs up structures just like climbing vines.
- FiloBot is different from conventional climbing robots as it doesn't depend on pre-programmed movements.
- It instead absorbs 3D printing filament through its head and extends its length over time, just like a creeper.

- The team utilised a combination of plant behaviours like phototropism, negative phototropism and gravitropism and utilises these naturally occurring behaviours in high-tech robots.
- The tests for FiloBot have been successful and displayed remarkable adaptability that adjusts its growth trajectory dynamically in response to moving light intensity.

Significance

- By equipping autonomous systems with transportable additive manufacturing techniques merged with bioinspired behavioural strategies, future robots can navigate unstructured and dynamic environments and even be capable of self-building infrastructure.
- This new innovation has opened new potential impact of technology that can be applied in robotics, where adaptability and responsiveness redefine the capabilities of climbing robots.

Other similar innovations

- A similar snake-like robot was unveiled by NASA's Jet Propulsion Laboratory (JPL), which was specifically crafted to work on rough terrains of our solar system's planets and moons.
- The robot named Exobiology Extant Life Surveyor (EELS 1.0) is engineered to navigate diverse landscapes, including ice, sand, cliff walls, deep craters and lava tubes.

What is end-to-end encryption? How does it secure information?

- End-to-end (E2E) encryption protects information in a way that has transformed human rights organisations', law-enforcement agencies', and technology companies' outlook on their ability to access and use information.
- Encryption is a way of protecting data from unauthorised access or tampering.

- It works by transforming the data into a secret code that only the intended recipient can decipher. This comes in useful for various cases, such as securing online communications, storing sensitive information, and verifying digital identities.
- The term encryption is generally used when referring to the privacy of stored data, while end-to-end encryption protects data as it's transferred between a location – which is crucial wherever there's a rapid exchange of information.
- In an E2EE-enabled app, only the person on each end – the sender and receiver – can read any exchanged messages.
- This is because messages get encrypted on your device before being sent and only are decrypted when they reach your intended recipient.

There are two main types of encryption:

- Symmetric: It uses the same key to encrypt and decrypt the data. In symmetric encryption, the key used to encrypt some information is also the key required to decrypt it.
- Asymmetric: It uses a pair of keys: one public and one private. The public key can be shared with anyone, but the private key must be kept secret.

Issues with End-to-end encryption

- Some potent malware can also 'snoop' on your messages by infiltrating your device via other means – an SMS and reading them before they are encrypted.
- The company that installs E2E encryption on its products can install a backdoor or an exception that allows the company to surmount the encryption and access the messages.

The need to overhaul a semiconductor scheme

- Since announcement, the Design-Linked Incentive scheme (DLI) scheme has approved only seven start-ups, markedly short of its target of supporting 100 over five years.

- Design-Linked Incentive scheme aims to offer financial incentives as well as design infrastructure support across various stages of development and deployment of semiconductor design(s) for Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design(s) over a period of 5 years.

Objectives

- Nurturing and facilitating the growth of domestic companies, startups and MSMEs.
- Achieving significant indigenization in semiconductor content and IPs involved in the electronic products deployed in the country, thereby facilitating import substitution and value addition in the electronics sector.
- Strengthening and facilitating access to semiconductor design infrastructure for the startups and MSMEs.
- Duration: The scheme shall initially be for three (3) years from 01-01-2022.
- Nodal Agency: C-DAC (Centre for Development of Advanced Computing)

The scheme has three components

- Chip Design infrastructure support: Under this C-DAC will set up the India Chip Centre to host the state-of-the-art design infrastructure (viz. EDA Tools, IP Cores and support for MPW (Multi Project Wafer fabrication) & post-silicon validation) and facilitate its access to supported companies.
- Product Design Linked Incentive: Under this component, a reimbursement of up to 50% of the eligible expenditure subject to a ceiling of 15 Crore rupees per application will be provided as fiscal support to the approved applicants who are engaged in semiconductor design.
- Deployment Linked Incentive: Under this an incentive of 6% to 4% of net sales turnover over 5 years subject to a ceiling of ₹30 Crore per application will be provided to approved applicants whose semiconductor design for Integrated

Circuits (ICs), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design are deployed in electronic products.

Mpemba effect: Heat up to cool down

- The Mpemba effect continues to captivate scientists with its complex interplay of physical mechanisms.
- Mpemba effect is named after Tanzanian student Erasto Mpemba, who brought attention to this counterintuitive phenomenon in 1969, making for curious observations.
- The effect is that hot water can freeze faster than cold water in similar conditions.
- While Aristotle, Francis Bacon, and René Descartes had noticed the effect centuries earlier, the Mpemba effect caught scientists' attention only more recently.

Different Experiments

- Researchers have conducted numerous experiments to determine the causes of this confusing phenomenon, but a consensus conclusion remains wanting.
- One cause, they have posited, is microbubbles left suspended in water that has been heated by boiling.
- These cavities promote convection and transfer heat faster as the water cools.
- Evaporation: as warmer water evaporates more, it also takes away some heat (evaporation is inherently endothermic, which is how sweat cools your skin). Both convection and accelerated heat transfer are enhanced in warmer water because such water is less dense.
- Yet another factor could be the presence of frost in cold water. Frost is an insulator and could slow the loss of heat.
- Scientists have also considered whether compounds in water like calcium carbonate could be precipitated by boiling, and then dissolve, thus increasing the water's freezing point.

Shallow soda lakes show promise as cradles of life on Earth

- Scientists have discovered that a shallow "soda lake" in western Canada could be a good match for Darwin"s "warm little ponds" where life got started on the primordial Earth.
- Soda Lake is a lake with a pH value usually between 9 and 11.
- High carbonate concentration, especially sodium carbonate, is responsible for the alkalinity of the water.
- It may also contain a high concentration of sodium chloride and other salts making it saline or hypersaline Lake.
- These are highly productive ecosystems compared to the freshwater lakes.
- These are the most productive aquatic environments on Earth because of the availability of dissolved carbon dioxide.
- They occur naturally in both arid and semi-arid areas.

Geology and Genesis

- A topography that limits the outflow of water from the lake is needed.
- An endorheic basin is formed when the water is confined without the outflow.
- The pH of the water in the depression rises through the evaporation of the lake which requires a suitable climate like the desert climate to balance between the inflow and evaporation.
- The rate at which carbonate salt dissolves in the lake water depends on the ecology of the surrounding area.
- The relative absence of magnesium and calcium is critical in the formation of the soda lake since magnesium or calcium is likely to dissolve quickly and displace the carbonate ion thus neutralising the pH of the lake water.

Biodiversity

- These are dominated by prokaryotes like bacteria and archaea, especially in lakes with higher levels of alkalinity.

- Multicellular organisms such as brine shrimp and fish are found in plenty if not most of the soda lakes.

Examples of Soda Lakes

- Africa and Asia have the highest number of soda lakes since the two continents have vast desert conditions which are perfect for the formation of soda lakes.
- Most of the soda lakes in Africa are located in Eastern Africa, especially in Kenya, Tanzania, and Ethiopia.
- Lake Natron in Tanzania is one of the most outstanding soda lakes in Africa
- India and China have the highest number of soda lakes in Asia.
- Some of the soda lakes in Asia include Lake Van, Tso Kar Salt Lake, Pangong Salt Lake, and Lake Zabuye.

The pandemic treaty can help the world brace for Disease X: WHO Director-General

- The World Health Organisation (WHO) emphasised the urgent need for global preparedness against a potential new pandemic, referred to as "Disease X".
- Disease X is referred to as a hypothetical pathogen or threat that can cause a major pandemic in future.
- It could be a new agent, a virus, a bacterium, or a fungus without any known treatment.
- The term coined by scientists and the World Health Organization could be any of the 25 families of viruses that have the capability to cause illness in people.
- Disease X was included in the WHO's updated Blueprint list of diseases back in 2018.
- Scientists are of the opinion that Disease X could be 20 times more deadly than SARS-Covid virus that caused pandemic recently.
- It represents an illness which is currently unknown but could pose a serious microbial threat to humans in the future.

Quantum computing can help decode the mysteries of aging and disease

- Researchers have unveiled a novel approach that integrates quantum computing with the study of living organisms.
- Quantum Computing is an area of computer science focused on the development of technologies based on the principles of quantum theory.
- Quantum theory explains the behaviour of energy and material at the atomic and subatomic levels.
- It is based on the principles of the superposition of matter and quantum entanglement and uses a different computation method from the traditional one.
- Quantum computers have the capability to sift through huge numbers of possibilities and extract potential solutions to complex problems and challenges.

How does it work?

- Where classical computers store information as bits with either 0s or 1s, quantum computers use qubits.
- While classical bits always represent either one or zero, a qubit can be in a superposition of one and zero simultaneously until its state is measured.
- In addition, the states of multiple qubits can be entangled, meaning that they are linked quantum mechanically to each other.
- Qubits can be made by manipulating atoms, electrically charged atoms called ions, or electrons, or by nanoengineering so-called artificial atoms, such as circuits of superconducting qubits, using a printing method called lithography.

What is Superposition and Entanglement?

- They are two features of quantum physics on which quantum computing is based.
- They empower quantum computers to handle operations at speeds exponentially higher than conventional computers and with much less energy consumption.

Superposition:

- A qubit places the quantum information that it contains into a state of superposition.
- This refers to a combination of all possible configurations of the qubit.
- Groups of qubits in superposition can create complex, multidimensional computational spaces.
- Complex problems can be represented in new ways in these spaces.

Entanglement:

- Pairs of qubits can be made to become entangled.
- This means that the two qubits then exist in a single state.
- In such a state, changing one qubit directly affects the other in a manner that's predictable.
- Quantum algorithms are designed to take advantage of this relationship to solve complex problems.
- While doubling the number of bits in a classical computer doubles its processing power, adding qubits results in an exponential upswing in computing power and ability.

MAGICAL: Astronaut Captures Stunning Alpenglow Phenomenon near Hindu Kush from ISS

- Alpenglow is a natural phenomenon when mountain slopes are illuminated by the sun as it rises or sets.
- The slopes turn a rosy, reddish, or orange hue depending on the angle of the sun and atmospheric conditions.
- It occurs during the twilight hours before or after sunset. It can also occur in the first minutes after the sun rises or sets.
- Alpenglow typically occurs in the range of colours between red, pink, and orange. This is because these are the longest warm rays of electromagnetic waves (light) —

they reach various surfaces, while cold rays are shorter and disappear faster in the atmosphere.

- Its vibrancy and colour depend on the location of the sun, the angle of the light, and other atmospheric conditions like clouds, humidity, and particulates.
- It can change quickly depending on how fast the sun sets on any given day.

Alabama's new execution method: What is nitrogen hypoxia?

- Alabama successfully executed a man who spent decades on death row using a new method called nitrogen hypoxia.
- Hypoxia is a medical term for a state of insufficient oxygen in the body.
- Nitrogen hypoxia is a process where pure nitrogen gas, or nitrogen gas at concentrations high enough to be lethal, is inhaled to the point of causing asphyxiation.
- It is a relatively new alternative to more common forms of capital punishment, like lethal injection and electrocution.
- In this method of execution, a respirator mask is placed over the inmate''s face, and pure nitrogen is pumped into the person''s lungs instead of oxygen.
- It leads to unconsciousness and then death from lack of oxygen.

Key facts about Nitrogen

- It appears as a colourless odourless gas.
- It makes up the major portion of the atmosphere.
- It is important for plant growth and can be 'fixed' by lightning or added to soils in fertilisers.
- It is important to the chemical industry. It is used to make fertilisers, nitric acid, nylon, dyes and explosives.
- Nitrogen gas is also used to provide an unreactive atmosphere. It is used in this way to preserve foods and in the electronics industry during the production of transistors and diodes.

- Large quantities of nitrogen are used in annealing stainless steel and other steel mill products. Annealing is a heat treatment that makes steel easier to work.
- Liquid nitrogen is often used as a refrigerant. It is also used to rapidly freeze foods, helping them to maintain moisture, colour, flavour and texture.

Outbreak of Western Equine Encephalitis Virus in Argentina

- The International Health Regulations National Focal Point (IHR NFP) in Argentina alerted the World Health Organization of a human case of Western Equine Encephalitis Virus (WEEV) infection.
- Western Equine Encephalitis Virus is a mosquito-borne infection caused by the Western Equine Encephalitis Virus (WEEV), which belongs to the Togaviridae family of viruses.
- The virus has an approximately 11.5 kilobases long single-stranded RNA genome.
- It is a recombinant of the eastern equine encephalitis virus (EEEV) and a Sindbis-like virus.
- Passerine birds are thought to be the reservoir and equine species as intermediate hosts.
- The primary mode of transmission of the infection to humans is through mosquitoes which act as vectors for the virus.

Symptoms:

- While most of the infections are asymptomatic, the infection may lead to severe consequences in rare cases.
- An estimated 4-5% of cases may manifest as infection/inflammation of the brain, resulting in neurological symptoms and sequelae of disease.
- Treatment: With no specific antiviral treatment, symptomatic care is crucial, especially for neurologic symptoms.

Unlocking the science of E Ink displays: Why we believe they must catch on

- With their crisp, paper-like screens, E-Ink displays like the Kindle are a pleasure to read on.
- E-Ink displays are a special type of screen technology often used in e-readers like the Amazon Kindle.
- The technology was originally developed in the 1990s at MIT and is now owned by E Ink Corporation.

Working:

- The screens work using tiny microcapsules filled with positively charged white particles and negatively charged black ones suspended in fluid inside the display.
- By applying positive or negative electrical charges to different areas of the screen, the white or black particles can be made to rise to the surface, creating the text and images on the display.
- Unlike LCD and LED displays that use a backlight, E Ink displays reflect light – just like paper. This makes them easier on the eyes for long reading sessions.
- They also require very little power since they don't need a backlight and only use energy when the image changes.
- The lack of backlighting also means that they are easier to read under brighter lighting conditions, which isn't the case with LCD/LED displays at all – legibility actually takes a hit under bright sunlight.

Advantages:

- They consume very little power compared to LCD and OLED displays. An E Ink display only draws power when the image is changed, meaning it can display a static image for weeks or months without needing a charge.
- They cause less eye strain for the user.

Disadvantages:

- It has a slow refresh rate compared to LCD and OLED displays, making them unsuitable for video or animation.

- It has limitations on colour and resolution compared to other display technologies.
- The niche nature of E-Ink manufacturing means the displays remain expensive, especially in larger sizes.

- Other applications: It is used in bus stop displays and walking direction signs and restaurants menu boards etc.

GenAI Predicted To Become A $100 Billion Industry By 2026

- Generative AI, or generative artificial intelligence, is a form of artificial intelligence (AI) in which algorithms automatically produce content in the form of text, images, audio, and video.
- Unlike traditional AI systems that are designed to recognize patterns and make predictions, generative AI creates new content.
- Generative AI is powered by foundation models (large AI models) that can multi-task and perform out-of-the-box tasks, including summarization, Q&A, classification, and more.
- These systems have been trained on massive amounts of data.
- It works by using a Machine Learning (ML) model to learn the patterns and relationships in a dataset of human-created content. It then uses the learned patterns to generate new content.
- Typically, it starts with a simple text input, called a prompt, in which the user describes the output they want. Then, various algorithms generate new content according to what the prompt is asking for.

Popular Generative AI Tools:

- ChatGPT: ChatGPT is an AI-powered chatbot developed by OpenAI, with a unique ability to not only generate written content but also converse with users fluently.

- Bard: Bard is a generative AI chatbot created by Google, based on LaMDA language model technology. It can answer questions asked by users or create new content from text or image prompts.

What is Machine Learning (ML)?

- It is defined as a discipline of artificial intelligence (AI) that provides machines with the ability to automatically learn from data and past experiences to identify patterns and make predictions with minimal human intervention.
- Machine learning methods enable computers to operate autonomously without explicit programming.
- ML applications are fed with new data and they can independently learn, grow, develop, and adapt.
- ML algorithms use computation methods to learn directly from data instead of relying on any predetermined equation that may serve as a model.

Scientists Have Discovered a Previously Unknown Protein Capable of Keeping Human Cells Healthy

- Researchers discovered a previously unidentified protein named mitochondrial coxiella effector F (MceF) with antioxidant properties produced by Coxiella burnetii, a Gram-negative intracellular bacterium.
- Mitochondrial coxiella effector F (MceF) is a bacterial protein capable of keeping human cells healthy even when the cells have a heavy bacterial burden.
- It is produced by Coxiella burnetii, a Gram-negative intracellular bacterium.
- After invading host cells, Coxiella burnetii releases MceF into cells.
- MceF interacts with glutathione peroxidase 4 (GPX4), an antioxidant enzyme located in the mitochondria, to improve mitochondrial function by promoting an anti-oxidizing effect that averts cell damage and death, which may occur when pathogens replicate inside mammalian cells.

Key Facts about Coxiella burnetii:

- It is a Gram-negative intracellular bacterium.
- It is the causative agent of a serious infection called Q fever, a zoonotic disease that can affect humans and animals.
- The bacterium is primarily transmitted to humans through the inhalation of contaminated aerosols from infected animals, particularly through the air-borne particles from placental tissues, urine, faeces, and milk of infected domestic animals like cattle, sheep, and goats.
- It causes atypical pneumonia in humans and coxiellosis in some animals, such as cattle, sheep, and goats.
- It is highly adapted to invade and control macrophages and monocytes–white blood cells that are part of the organism's front-line immune defence–inhibiting the host's responses to the infection.
- Unlike other bacteria, which cause disease only when they multiply to reach large numbers, a single C. burnetii is enough to make a healthy person sick.

How to grow seafood outside the sea — and why a Govt lab in Kochi has taken up this project

- ICAR-Central Marine Fisheries Research Institute (CMFRI) has entered into a collaborative research agreement with a private-sector start-up offering cultivated meat technology solutions to grow fish meat in the laboratory.
- Lab-grown fish is merely a type of lab-grown — or cultivated/cultured — meat.
- Seafood without the sea is 'grown' in the same way as other cultivated meats are grown — without the need to raise and kill an animal.
- Process: Cultivated fish meat is produced by isolating specific cells from fish and growing them in a laboratory setting using media that is free of animal components.
- The final product is expected to replicate the flavour, texture, and nutritional qualities of 'real' fish meat.

Role of Central Marine Fisheries Research Institute:

- It will focus on the genetic, biochemical, and analytical work related to the project.
- In its cell culture lab, it will carry out research on early cell line development of high-value marine fish species — a process that involves isolating and cultivating fish cells for further research and development.
- It will initially focus on developing cell-based meat of fish such as pomfret, kingfish, and seerfish.
- Recently, a number of countries have made great strides in this pioneering technology.
- Israel is the frontrunner, followed by Singapore, the United States and China.

Can Alzheimer's disease spread from human to human?

- As per a study, rare medical accidents can lead to the transmission of Alzheimer''s from one human to another.
- Alzheimer''s Disease is a brain condition that causes a progressive decline in memory, thinking, learning, and organising skills.
- It is the most common type of dementia, accounting for 60-80% of all dementia cases.
- It involves parts of the brain that control thought, memory, and language.
- It can seriously affect a person's ability to carry out daily activities.
- The condition usually affects people aged 65 years and over, with only 10% of cases occurring in people younger than this.
- Cause: The exact cause of Alzheimer''s disease is not fully understood, but it is believed to be influenced by a combination of genetic, environmental, and lifestyle factors.

Symptoms:

- The early signs of the disease include forgetting recent events or conversations.

- Over time, it progresses to serious memory problems and loss of the ability to perform everyday tasks.
- Treatment: There's no cure for Alzheimer's, but certain medications and therapies can help manage symptoms

What is Dementia?

- Dementia is not a specific disease but is rather a general term for the impaired ability to remember, think, or make decisions that interfere with everyday activities.
- Alzheimer's disease is the most common type of dementia. However, there are several other types of dementia, each with its own underlying causes. Some of the common types of dementia include Vascular Dementia, Lewy Body Dementia, Frontotemporal Dementia, and Mixed Dementia.
- Though dementia mostly affects older adults, it is not a part of normal ageing.

SOCIETY

Himachal Pradesh implements ST tag for Hattees after Centre clarifies on SC community of same name

- Hattee community are a close-knit community who got their name from their tradition of selling homegrown vegetables, crops, meat and wool etc. at small markets called 'haat' in towns.
- Their homeland straddles the Himachal-Uttarakhand border in the basin of the Giri and Tons rivers, both tributaries of the Yamuna.
- This community's men generally don a distinctive white headgear during ceremonies, is cut off from Sirmaur by two rivers called Giri and Tons. Tons divide it from the Jaunsar Bawar area of Uttarakhand.

- The Hattees who live in the trans-Giri area and Jaunsar Bawar in Uttarakhand were once part of the royal estate of Sirmaur until Jaunsar Bawar's separation in 1815.
- They are governed by a traditional council called Khumbli.
- The two Hattee clans, in Trans-Giri and Jaunsar Bawar, have similar traditions, and inter-marriages are common.

PM Arrives in Kavaratti To Inaugurate, Lay Foundation for Development Projects

- Kavaratti is the capital of Lakshadweep (smallest Union Territory of India) and its most developed island.
- It lies 360 km of the coast of the State of Kerala.
- It is located in the centre of the Lakshadweep archipelago. It is located between Agatti Island on the west and Andrott Island on the east.
- It has an area of 4.22 sq km. The maximum length of the island is 5.8 km, and width is 1.6 km.
- The island is 2 to 5 m above the mean sea level on the western side and 2 to 3 m on the eastern side.
- There is a shallow lagoon on the western side of the island, and coconut palms grow on the northern side.
- The island is home to 12 atolls, five submerged banks, and three coral reefs.
- Strangely, Kavaratti has a small inland lake at its northern end.
- Kavaratti town is noted for the carved wooden pillars and roofs of its mosques and the carved stones of its graveyards.
- It has the maximum percentage of non–islanders as residents.
- Languages Spoken: Malayalam and Mahl
- Karavatti has been selected as one of the hundred Indian cities to be developed as a smart city under the flagship Smart Cities Mission.

Savitribai Phule Jayanti: Celebrating the lady who lit the lamp of learning

- Every year on January 3rd, India celebrates a special day called Savitribai Phule Jayanti.
- Savitribai Phule was born in a small village in Satara district of Maharashtra on January 3, 1831, Savitribai Phule was an Indian social reformer, poet, and powerful voice in the Indian freedom struggle.
- She was an active participant in the women''s liberation movement.
- Savitribai trained at Ms. Farar''s Institution in Ahmednagar and at Ms. Mitchell''s school in Pune to become the first female teacher in India.
- Savitribai Phule and her husband, Jyotirao Phule (one of the most famous social reformers in Maharashtra), opened India''s first school for women in Pune in 1848.
- Despite resistance from society, by 1851, Phule was running 18 schools for children of different castes, with a strength of 150 girls.
- They also established two educational trusts: the Native Female School, Pune, and the Society for Promoting the Education of Mahars, Mangs, and others from downtrodden castes.
- In 1852, the British government acknowledged the great work of the Phule family in the field of education and honored Savitribai by naming her the best teacher.
- She, along with her husband, Jyotirao Phule, actively worked against the caste-based discrimination prevalent in society.
- She played a crucial role in grooming Jyotirao Phule's pioneering institution, Satyashodhak Samaj (1873) that fought for equality of all classes.
- In 1852, she initiated the Mahila Seva Mandal, a platform aimed at creating awareness about women's rights. Notably, this platform brought together members of all castes, challenging entrenched social hierarchies.

- Savitribai Phule was a vocal advocate for the rights of widows. She campaigned against the prevailing customs that forced widows into a life of deprivation and for the right of widows to remarry.
- Savitribai organized a barbers'' strike in both Mumbai and Pune to demonstrate their opposition to the practice of shaving the heads of widows.
- Savitribai also fought against dowry and other oppressive social customs.
- In 1863, Jyotirao and Savitribai began Balhatya Pratibandhak Griha, India''s first home prohibiting infanticide, helping pregnant Brahmin widows and rape victims.
- Savitribai Phule wrote two books, Kavya Phule in 1854 and Bavan Kashi Subodh Ratnakar in 1892, which are collections of her poems.
- She wrote the famous poem ''Go Get Education'' to encourage backward and oppressed class people to get an education.
- Her birth anniversary, celebrated as Savitribai Phule Jayanti, is a day to commemorate her legacy and contributions to education and social equality.

Debrigarh in Centre's tourist scheme

- The tourism ministry has included Debrigarh Wildlife Sanctuary in the Swadesh Darshan 2.0 scheme.
- Swadesh Darshan Scheme was launched in 2015 by the Ministry of Tourism, Government of India, to develop sustainable and responsible tourism destinations in the country.
- It is 100% centrally funded scheme.
- Under the scheme, the Ministry of Tourism provides financial assistance to State governments, Union Territory Administrations or Central Agencies for development of tourism infrastructure in the country.
- Operation & Maintenance (O&M) of the projects sanctioned under Swadesh Darshan Scheme is the responsibility of the respective State Government/UT Administration.

Swadesh Darshan 2.0:

- The Ministry of Tourism has revamped its Swadesh Darshan scheme as Swadesh Darshan 2.0 (SD2.0) for development of sustainable and responsible tourist destinations covering tourism and allied infrastructure, tourism services, human capital development, destination management and promotion backed by policy and institutional reforms.
- The objective for the Swadesh Darshan 2.0 scheme envisage increase in private sector investment in tourism & hospitality.
- It may help in increasing Public Private Partnerships (PPP) in the field of tourism and operation and maintenance of the created assets under the scheme.

Key Facts about Debrigarh Wildlife Sanctuary:

- Location: It is situated in the Bargarh district of Odisha near the Hirakud dam (Mahanadi River).
- It finds a special mention because of noted freedom fighter Veer Surendra Sai. During his rebellion against the British, his base at 'Barapathara" was located within the sanctuary.
- It was declared a wildlife sanctuary in 1985.
- Vegetation: Dry deciduous mixed forests.
- Flora: Major trees found here are Sal, Asana, Bija, Aanla, Dhaura etc.
- Fauna: A huge variety of wild animals reside in the dense forest of the sanctuary, such as Tiger, Sloth Bear, Leopard, Hyena, Spotted Deer, Antelopes, Sambar, Gaur, Nilgai, Bison, Langur Monkeys etc.

'Government failed us': Sikki artisans suffer livelihood losses amid climate change & state apathy

- Sikki artisans suffer livelihood losses amid climate change and failed promise of government in providing financial help in setting up of Sikki stalls in countrywide trade fairs held round the year.

- Sikki grass belongs to the zizanoides grass family.
- It is a rich yellowish variety of reed grass, locally known as 'Kaincha' is called Golden Grass due to its golden luster on drying.
- Scientifically called Chrysopogon zizanioides, it finds mention in ancient Sanskrit texts such as the Ramayana, where it is referred to as viran, sugandhimool, ushir and nalad.
- This grass grows indigenously in the Tarai regions of Uttar Pradesh and Bihar and has an average height of 3-4 feet.
- While the stem is used to make artefacts, the roots are used for extracting oil that is used both for perfumery and medicinal purposes.
- In the hilly terrains, it is also now grown to arrest soil erosion.
- Sikki got the geographical identification tag in 2018.

Uses:

- It is most known for its handicraft. It has been a source of livelihood for many since antiquity.
- It is used to make traditional items such as multipurpose baskets, ornaments, show pieces and many more utility items that are still considered valuable in rural India.

Challenges

- One of the serious challenges that Sikki craftsmen are facing currently is the brunt of climate change that has impacted the quality of the grass.
- The deteriorating quality of grass due to continual spike in temperature that impacts the softness of Sikki.
- Brittle grass needs extra processing time and is not suitable for making baskets or other artefacts.

Ministry of Education launches PRERANA program

- The Department of School Education & Literacy, Ministry of Education has launched 'Prerana: An Experiential Learning program'.
- PRERANA program aims to offer a meaningful, unique, and inspiring experience to all participants, thereby empowering them with leadership qualities.
- It is driven by a strong commitment to integrate principles of the Indian education system and the philosophy of value-based education which is a cornerstone of the National Education Policy (NEP) 2020.
- It is a week-long residential program for selected students of class IX to XII.
- A batch of 20 selected students (10 boys and 10 girls) will attend the program, every week from various parts of the country.
- It will run from a Vernacular School, established in 1888, in one of the oldest living cities of India, Vadnagar, district Mehsana, Gujarat.
- The curriculum of Prerana School prepared by IIT Gandhi Nagar is rooted in nine value-based themes: Swabhiman and Vinay, Shaurya and Sahas, Parishram and Samarpan, Karuna and Sewa, Vividhta and Ekta, Satyanishtha and Shuchita, Navachar and Jigyasa, Shraddha aur Vishwas, and Swatantrata and Kartavya.
- The day-wise program schedule will feature yoga, mindfulness, and meditation sessions, followed by experiential learning, thematic sessions, and hands-on interesting learning activities.
- Evening activities will include visits to ancient and heritage sites, inspirational film screenings, mission life creative activities, talent shows etc. ensuring a holistic learning approach.
- Apart from this, students will engage in diverse activities, embracing indigenous knowledge systems, latest State-of-Art technologies, and learning from inspirational personalities.

Selection procedure:

- Students can register through the portal, wherein applicants can fill the requisite details.

- The registered applicants will go through a selection process, as prescribed on the portal.
- Applicants can also join the selection procedure conducted at the School/block level, on designated 'Prerana Utsav' day, through various activities.

Mayurbhanj's red ant chutney receives GI tag

- The Similipal kai chutney made with red weaver ants by the tribal people of Odisha's Mayurbhanj district (Odisha) received the geographical identity tag.
- The savoury chutney is popular in Mayurbhanj region for its healing properties and also deemed important for nutritional security of the tribal people.
- Many indigenous people from Mayurbhanj district venture into nearby forest to collect kai pimpudi (red weaver ant).
- Around 500 tribal families have been eking out a living by collecting and selling these insects and a chutney made with them.

Health benefits:

- The scientists analysed the red weaver ants and found it contains valuable proteins, calcium, zinc, vitamin B-12, iron, magnesium, potassium, sodium, copper, amino acids, among others. Consuming the species can help boost the immune system and prevent diseases.
- The tribal healers also prepare a medicinal oil in which they dip the ants along with pure mustard oil.
- After a month, this concoction is used as body oil for babies and to cure rheumatism, gout, ringworm and other diseases by the tribes.
- The local people also consume this to stay fit and strong.

Key facts about Red Weaver Ants:

- These are indigenous to Mayurbhanj and are found in abundance in the jungles of every block area of the district, including in the Similipal Tiger Reserve, throughout the year.

- They form colonies with multiple nests in trees. Each nest is made of leaves stitched together with the silk produced by their larvae.
- They mostly lodge in trees like mango, sal, jambu and jackfruit. The nests are strong enough against wind and impermeable to water.
- Kai's nests are usually elliptical in shape and range in size from single small leaf folded and bound onto itself to large nest consisting of many leaves.
- The Kai families consist of three categories of members — workers, major workers and queens. Workers and major workers are mostly orange coloured.

Keeping Thanjavur doll industry out of the doldrums is no child's play

- Thanjavur dolls are facing stiff competition from electronic toys and e-commerce platforms, besides a severe labour crunch and shortage of clay.
- The craft was brought to Thanjavur by Maratha ruler Raja Serfoji in the early 19th Century.
- In Tamil language, it is called "Thanjavur thalayatti bommai".
- Thanjavur dolls are primarily of two kinds, one is the bobble-head version, and the other is the tilting doll version.
- The dancing doll has four sections (including the arms that are individually glued to the torso), each balancing on the other with the help of inner metal loop hooks that create the light bobbing movement.
- It earned the Geographical Indication tag in 2009.

Material used:

- Doll-makers use papier-mâché, plaster of Paris and other materials for the body.
- A mixture of vandal mann (fine silt deposited by rushing streams of water), kali mann (clayey riverbed mud), and manal (loose aggregate) is required to make the dolls' pedestals.
- Copper sulphate powder is added as a fungicide.

Process:

- All the dolls have a lightweight body made of tapioca flour, papier-mache and plaster of Paris cooked and kneaded to the consistency of 'roti' dough.
- Each toy is made in halves, by pressing the rolled-out 'doll dough' into cement moulds, with liberal dusting of chalk powder.
- Dolls pass through at least seven stages from mould to assembly before they are packed for despatch, with each step, such as painting the facial features and costume embellishments, requiring a skilled artisan's attention.

Republic Day Celebrations 2024: a whopping 1.37 crore students take part in Project Veer Gatha 3.0 pan India; 100 selected winners to witness 26th January parade as special guests

- The third edition of Project 'Veer Gatha', as part of Republic Day celebrations, has witnessed an overwhelming pan India response.
- Project Veer Gatha is a joint initiative of Ministry of Defence and Ministry of Education.
- It was instituted under Gallantry Awards Portal (GAP) in 2021.
- Aim: With the aim to disseminate the details of acts of bravery of the Gallantry Awardees and the life stories of these brave hearts among the students so as to raise the spirit of patriotism and instill amongst them values of civic consciousness.
- Project Veer Gatha deepened this noble aim by providing a platform to the school students to do creative projects/activities based on gallantry award winners.
- As part of this, the students framed different projects through various media like art, poems, essays and multimedia on these gallantry award winners and best projects were awarded at national level by the Ministry of Defence and the Ministry of Education.

Strung out: Bobbilli Veena craftsmen struggle for livelihood

- Despite the longstanding fame of the Bobbili veena, the livelihoods of craftsmen face challenges due to a lack of demand from the public and
- Bobbilli Veena is a traditional 'Saraswati Veena' from Bobbili and is famed for its fine tune and distinctive notes.
- It is a large plucked string instrument used in Carnatic music.
- The making of the veena began in the 17th century during the reign of Pedda Rayudu, the king of Bobbili Samsthanam who was a great patron of music.
- Features
- These veenas are painstakingly crafted from Jack-wood tree logs in Gollapalli, a town in Bobbili (Andhra Pradesh).
- It takes almost a full month for a log of mute wood to be crafted into a fine musical instrument.
- Jack-wood is preferred as it is light and the unique grain of the wood renders the quality of swara or tone.
- A single piece of wood is used to create the instrument giving it the name 'Ekandi Veena'.
- These Veenas are also remarkable for the exquisite designs etched on the body, making each piece exclusive.
- With their origin dating back to the Seventeenth Century, these veenas are played in a distinctive style, which also led to the coinage of the 'Bobbili Veena Sampradayam'.
- It earned a Geographical Indication (GI) tag in 2012for its unique design and high-quality craftsmanship

From red ant chutney to black rice, the 7 Odisha products that have bagged GI tags

- Seven products from Odisha, ranging from the Similipal Kai chutney made with red weaver ants to the embroidered Kapdaganda shawl, have bagged the coveted Geographical Indication (GI) tag.

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

Key facts about newly GI Tagged products

- **Kapdaganda Shawl**
- It is woven and embroidered by the women of the Dongria Kondh tribe, a particularly vulnerable tribal group (PVTG) in the Niyamgiri hills in Odisha's Rayagada and Kalahandi districts.
- The shawl reflects the rich tribal heritage of the Dongria Kondhs.
- The shawl is worn by both men and women and the Dongrias give it to their family members as a token of love and affection.
- **Lanjia Saurpa Painting**
- It is one of the oldest tribal art forms, is also known as Idital.
- The artworks are famous for their beauty, aesthetics, ritualistic association and iconography.
- It belongs to the Lanjia Saura community, a PVTG largely residing in the Rayagada district. These paintings are in the form of exterior murals painted on the mud walls of homes.
- **Koraput Kala Jeera Rice**
- The black-coloured rice variety, also known as the 'Prince of Rice', is famous for its aroma, taste, texture and nutritional value.
- As the rice grains resemble cumin seeds, it is also called Kala Jeera.

- Its consumption helps in increasing haemoglobin levels and improves metabolism in the body.
- **Nayagarh Kanteimundi Brinjal**
- It is known for its prickly thorns on the stems and the whole plant.
- The green and round fruits contain more seeds as compared to other genotypes.
- It is famous for its unique taste and relatively short quick cooking time.
- The plants are resistant to major insects and can be grown with minimal pesticide.
- **Odisha Khajuri Guda (Jaggery)**
- It is a natural sweetener extracted from date palm trees and has its origin in the Gajapati district.
- Traditionally, the jaggery is prepared in a trapezoidal form called 'Patali Gur' and is organic by nature. It is dark brown and has a unique taste.
- **Dhenkanal Magji**
- It is a type of sweet made from cheese from buffalo milk, with distinct characteristics in terms of appearance, taste, flavour, shape, and size.

Prime Minister greets on the occasion of Pravasi Bharatiya Diwas

- Pravasi Bharatiya Diwas is also known as Non-Resident Indian (NRI) Day, is celebrated on January 9 to mark the contribution and achievements of the overseas Indian community to the development of India.
- It is the flagship event of the Ministry of External Affairs.
- The day also commemorates the return of Mahatma Gandhi, the greatest Pravasi, from South Africa to India in 1915, who led India''s freedom struggle and changed the lives of Indians forever.
- It was first celebrated in 2003. It was an annual event earlier, but in 2015, the government revised its format to celebrate PBD once every two years.

- It has become a platform to connect the Indian diaspora with their roots and encourage their continued engagement with India's progress.
- It is held in different cities, to showcase the diversity and progress of different regions of India.
- Till date, 17 conventions have been held. The last Pravasi Bharatiya Divas was celebrated in the Indore of Madhya Pradesh in 2023.

Kateel Yakshagana mela to revert to all-night shows from January 14

- A century-old Yakshagana mela in Dakshina Kannada will resume its all-night performances following approval from the Karnataka High Court.
- Kateel Yakshagana mela is a famous Yakshagana troupe started in the mid-19th century.
- The Yakshagana troupe, Kateel Sri Durgaparameshwari Yakshagaana Dashavatara Mandali, popularly known as Kateel Mela is an important 'Harake Seva' (hosting the Yakshagana show for God fulfilling a wish) troupe.
- It performs on request by devotees who have taken a vow (Harake) to arrange a show of Yakshagana for fulfilment of a desire or as a service.

Key facts about Yakshagana

- It is a traditional folk-dance form popular in Coastal Karnataka.
- It is a rare combination of dance, music, song, scholarly dialogues and colourful costumes.
- Traditionally, men portray all roles, including the female ones, though women are now part of Yakshagana troupes.
- A typical troupe consists of 15 to 20 actors and a Bhagawatha,who is the master of ceremonies and the main storyteller.

Elements of Yakshagana

- The Act: Each performance typically focuses on a small sub-story (known as 'Prasanga') from ancient Hindu epics of Ramayana or Mahabharata.

- The show consists of both stage performances by talented artists and commentary (performed by the lead singer or Bhagawatha) accompanied by traditional music.
- The Music: Musical instruments used in Yakshagana include Chande (drums), Harmonium, Maddale, Taala(mini metal clappers) and flute among others.
- The Dress: Costumes used in Yakshagana are very unique and elaborate. Large size headgear, coloured faces, elaborate costumes all over the body and musical beads on the legs (Gejje).

Railway Ministry includes Udupi station under Amrit Bharat Station Scheme for redevelopment

- The Udupi station under the Konkan Railway Corporation Ltd. (KRCL) network was included in the Railway Ministry's Amrit Bharat Station Scheme (ABSS) for redevelopment.
- Amrit Bharat Station Scheme (ABSS) is an ongoing Indian Railways mission launched in February 2023 by the Ministry of Railways to redevelop 1,309 stations nationwide.
- The scheme aims to transform railway stations into modern, well-equipped hubs with improved passenger amenities, better traffic circulation, inter-modal integration, and enhanced signage.
- It is based on Master Planning for the long termand the implementation of the elements of the Master Plan as per the needs and patronage of the station.
- The scheme shall cater for the introduction of new amenities as well as the upgradation and replacement of existing amenities.
- The ultimate goal is to transform these stations into vibrant city centres over the long term.

  Key Features:

- Modern passenger amenities: This includes providing clean and hygienic waiting areas, restrooms, Special amenities for the disabled, and food and beverage outlets.
- Improved traffic circulation: This includes creating separate entry and exit points for passengers and vehicles, widening roads and footpaths, and providing adequate parking facilities.
- Inter-modal integration: This includes providing seamless connectivity between railway stations and other modes of transport, such as buses, taxis, and auto-rickshaws.
- Upgraded signage: This includes providing clear and visible signage in multiple languages to guide passengers.
- Sustainability: This includes using energy-efficient lighting and appliances.

Eco-friendliness:

- Rainwater harvesting systems and green spaces
- Ballastless tracks, which reduce noise and vibration
- Roof plazas, where available, provide additional space for commercial activities and passenger amenities.

What do tribal groups like the Soligas and Yeravas eat?

- The launched Forgotten Trails: Foraging Wild Edibles, authored by Malemleima Ningombi and Harisha RP, chronicled the foods that Soligas and Yeravas tribes forage from the forests.
- Indigenous groups Soligas and Yeravas have been living in the Cauvery Basin and the surrounding hills of peninsular India for thousands of years.
- Soligas, one of the oldest indigenous communities in the country, are the original inhabitants of Karnataka and live mostly in the Chamarajanagar and Mandya districts.

- Honey is an important part of the diet for the Soliga people, who still forage large parts of their food from the biodiversity-rich Ghats.
- They reside in the peripheral forest areas near Biligiri Rangana Hills and Male Mahadeshwara.
- They are the first tribal community living inside the core area of a tiger reserve in India to get their forest rights officially recognised by a court of law.
- Soligas use Silver cockscomb as a nutritious leafy green vegetable, as it is high in nutrients such as beta-carotene and folic acids, and have vitamin E, calcium and iron.
- Also, the scientific community has named a new genus (Soliga ecarinata) of wasp after this community.

Who are Yeravas?

- The Yeravas, on the other hand, came to the state from Wayanad district in Kerala and settled in Kodagu district of Karnataka.
- Yeravas use more tubers than Soligas.
- Language: They speak their own language of Ravula.
- Mushrooms become part of the Yerava diet during monsoon.
- Issues: The food that Soligas and Yeravas depend on for survival is now affected by changes in land use and shifting policies. Worse, traditional knowledge is steadily being lost as young people are migrating out.

Interest in indigenous cattle breeds like the Pulikulam is reviving

- Interest in indigenous cattle breeds like the Pulikulam is reviving which is famous for a local game called Jallikattu in Tamilnadu.
- Pulikulam Cattle breed is a popular draught and game breed of Tamil Nadu.
- The cattle originated from Pulikulam; a village located in Sivaganga district of Tamil Nadu.

- It is also known as Palingu maadu, Mani maadu, Jallikattu maadu, Mattu maadu and Kilakattu maadu.
- These are maintained as migratory herds, and its draught and manure capabilities play a significant role in the rural livelihood of the communities rearing them for draught and organic agricultural production.
- This breed of cattle is famous for a local game called Jallikattu where bulls are used as a bull-taming sport.
- Pulikulam / Alambadi bulls are dark grey, almost black and cows grey or white.

Prime Minister extends greetings to the people of India on Parakram Diwas

- Parakram Diwas is celebrated on January 23 to commemorate the birth anniversary of freedom fighter Subhas Chandra Bose.
- This year marks the 127th birth anniversary of Bose, fondly known as 'Netaji'.
- Parakram Diwas aims to instil fearlessness and patriotism, especially among the youth, inspiring them to stand strong in the face of challenges.

Key points about Subhas Chandra Bose

- He was born on January 23, 1897, in Cuttack, Orissa.
- In 1920, he passed the civil service examination, but in April 1921, after hearing of the nationalist turmoil in India, he resigned from his position.
- He was an Indian nationalist leader who was a key figure in the Indian independence movement against British colonial rule.
- Bose then joined the Indian National Congress and actively participated in the Indian independence movement.
- President of Indian National Congress: Bose was elected president of the Indian National Congress for two consecutive terms but resigned from the post following ideological conflicts with Mahatma Gandhi.
- In 1939, he formed the Forward Bloc, an organization aimed at unifying all the anti-British forces in India.

- At the outset of the Second World War, he fled from India and traveled to the Soviet Union, Germany and Japan, seeking an alliance with the aim of attacking the British in India.
- With Japanese assistance, he reorganized and later led the Indian National Army, formed from Indian prisoners-of-war and plantation workers from Malaya, Singapore, and other parts of Southeast Asia, against British forces.
- Also with Japanese monetary, political, diplomatic, and military assistance, he formed the Azad Hind Government in exile, and regrouped, and led the Indian National Army in battle against the allies at Imphal and in Burma.

With just two speakers, a language in Kannur is on the brink

- In the remote colony of Kookanam, near Karivellur grama panchayat in Kerala, the Chakaliya community is grappling with the imminent loss of its unique language Madhika.
- Madhika language is a language spoken by the Chakaliya community.
- It does not have script.
- Despite sounding similar to Kannada it can still bewilder listeners due to its diverse influences.
- It is a blend of Telugu, Tulu, Kannada, and Malayalam.
- It is largely influenced by Havyaka Kannada, an old form of Kannada.
- It is fast becoming extinct with the younger generation opting for Malayalam.

Key facts about Chakaliya community

- The community was nomadic and worshippers of Thiruvenkatramana and Mariamma.
- They migrated to northern Malabar from the hilly regions of Karnataka centuries ago.
- Initially they were recognised as Scheduled Tribe, it was later included in the Scheduled Caste category in Kerala.

- The mention of the community can be found in the book Caste and Tribes of Southern India.

Government of India's Initiative to preserve languages

- The Government of India has initiated a Scheme known as "Scheme for Protection and Preservation of Endangered Languages of India" (SPPEL).
- Under this Scheme, the Central Institute of Indian Languages (CIIL), Mysore works on protection, preservation and documentation of all the mother tongues/languages of India spoken by less than 10,000 people which are called endangered languages.

PM YASASVI 2023 Scheme: ₹32.44 cr for Pre-Matric & ₹387.27 Crore for Post-Matric Scholarships allotted

- A total of ₹44 Crore has been released for Pre-matric Scholarships and ₹387.27 Crore for Post-Matric Scholarships to States/Union Territories (UTs) under the PM YASASVI scheme in 2023.
- PM Young Achievers Scholarship Award Scheme (PM YASASVI) is a scholarship scheme for Other Backward Class (OBCs), Economically Backward Class (EBC), and Denotified Nomadic Tribes (DNT) students.
- Under this scheme, students can avail of Pre-Matric Scholarships from Classes 9 to 10 and Post-Matric Scholarships for their higher education at the post-matriculation or post-secondary level.
- Exceptional students also have the opportunity to receive scholarships for top-tier schools and colleges.
- Additionally, hostel facilities are provided for OBC students through a construction scheme.

Eligibility:

- Other Backward Class (OBC), Economically Backward Classes (EBC), and Denotified, Nomadic, and Semi-Nomadic Tribes (DNT)

- Parents or guardians annual income is not more than Rs. 2.50 Lakhs.
- Studying in a Top Class School in Class 9 or 11.
- These scholarships shall be available for studies in India only and will be awarded by the Government of State/Union Territory to which the applicant actually belongs, i.e., permanently settled.
- Entitlement: Upto Rs. 75,000 p.a. for Class 9/10, 1,25,000 p.a. for Class 11/12, covering the school tuition fee/hostel fee.
- Implementing Agency: Department of Social Justice and Empowerment, Ministry of Social Justice and Empowerment.

Jharkhand's in R-Day parade showcases skill of tribal women in Tasar silk production

- Jharkhand''s tableau in the held Republic Day parade showcased the skill of tribal women in the production of Tasar silk.
- Tasar Silk is a type of wild silk, which is made from silkworms that feed on plants like Asan and Arjun.
- People from different parts of India call it tusaar, tusser, tushar, tusa, tassore, and tasar etc.
- **Producers:**
- Globally, it is produced in China, Sri Lanka, and Bangladesh.
- India is the second-largest producer of tussar silk and the exclusive producer of Indian tussar (also known as tropical tussar), which is largely tended to by tribals.
- In India, it is primarily produced in Madhya Pradesh, Jharkhand, and Chhattisgarh. Currently, Jharkhand is one of the largest producers.
- **Features:**
- It is famous and valued for its natural golden colour. The silk can also be found in shades of brown, cream, and orange.

- The colour is caused by the production process due to the presence of carotenoids in the silk.
- It is known for its distinctive texture, which is often described as being "rough" or "crinkly."
- This is due to the fact that the fibres of tasar silk are shorter than those of other silks, such as mulberry silk.
- As a result, tasar silk fabrics are less smooth and have a more uneven surface.
- Tasar silk fabrics have a characteristic weave that is different from other types of silk.
- The threads of tasar silk are often thicker than those of other silks, and they are woven in a way that creates a "checkerboard" pattern.
- It is lightweight yet surprisingly strong, with a luxuriously soft feel often compared to that of cashmere or velvet.
- It does not retain moisture, and this quality makes it a delight to wear in warmer climates of the world.
- Tasar silk is more porous, which makes it more wearable.

From stage to streets: Manipur's Shumang Leela performers grapple with survival amid ongoing ethnic strife

- The artists of Shumang Leela are bearing the brunt of the enduring ethnic violence in Manipur which is also jeopardising the vibrant cultural fabric of the state.
- Shumang Leela is a traditional form of theatre in Manipur.
- In this, the roles of female artists are all played by male actors and male characters are played by female artists in the case of female theatre groups.
- It was started as a comic genre for royalty and has evolved into a powerful medium for mass education, entertainment, and relaxation.
- In this, the roles of women are all played by men, called Nupi Shabis.

- The tradition is believed to be descended from Lai Haraoba,a ritual of the Meitei community of Manipur.
- Purpose: The plays provide a vehicle for educating the public about social, political, and economic issues.
- Types - Shumang Leela is of two types
- Nupa Shumang Leela– It is Performed only by men
- Nupi Shumang Leela– It is Performed only by women

What is Lai Haraoba?

- Lai Haraoba is a religious festival celebrated by the Meitei people who are largely settled in and around Manipur.
- It is held at neighbourhood shrines dedicated to the local umanglai deities.
- It is observed in the months between February and May-June.

KEY FACTS FOR PRELIMS

Mind-blowing: 22-Million-Year-Old Lost Forest Discovered in Panama Canal

- Scientists stumbled upon a lost forest in the Panama Canal, dating back around 22 million years.
- Panama Canal is an artificial waterway that connects the Atlantic Ocean with the Pacific Ocean.
- The canal cuts across the Isthmus of Panama and is a conduit for maritime trade.
- It was cut through one of the narrowest saddles of the isthmus that joins North and South America.
- It is one of the two most strategic artificial waterways in the world, the other being the Suez Canal.
- It is approximately 80 kilometres long.
- It consists of a series of locks that raise and lower the water level to facilitate the passage of ships through the continental divide.

History:

- France began work on the canal in 1881, but financial troubles and diseases made the initiative fail.
- The United States took over the project on May 4, 1904, and opened the canal on August 15, 1914, and then managed the waterway until 1999.
- On December 31, 1999, Panama took over full operation, administration, and maintenance of the Canal, in compliance with the Torrijos-Carter Treaties negotiated with the United States in 1977.

President of India to confer Pradhan Mantri Rashtriya Bal Puraskar

- The President of India to confer Pradhan Mantri Rashtriya Bal Puraskar 2024 to 19 children for their exceptional achievement in six categories.
- The awards are given to children in the age group 5 – 18 years for their excellence in seven categories for Bravery, Art & Culture, Environment, Innovation, Science & Technology, Social Service and Sports.
- Objective: Encourage children who had shown exceptional achievement in any field including academics, arts, culture and sports etc.

The two categories covered under these Awards are as follows:

- **Bal Shakti Puraskar (earlier called National Child Award) –**
- These awards are to be given as recognition to children with exceptional abilities and outstanding achievement in the fields of innovation, scholastic achievements, sports, arts & culture, social service and bravery which deserves recognition.
- Each awardee will be given a medal, a cash prize of Rs. 1,00,000/-, book vouchers worth Rs. 10,000/-, a certificate and citation.
- **Bal Kalyan Puraskar (earlier called National Child Welfare Award)**
- Individual - These Awards are given as recognition to individuals who have made an outstanding contribution towards service for children in the field of Child Development, Child Protection and Child Welfare for not less than 7 years and have a positive impact on the lives of children.

- The number of awards would be three. The award consists of a cash prize of Rs. 1, 00,000/ - (one lakh), a citation and a certificate to each awardee.
- Institution - These awards are given to institutions who have done exceptional work for the cause of children in any field of child welfare. The number of awards would be three.
- The award for institution consists of a prize of Rs. 5,00,000/ - each and a citation and a certificate.

The meeting for review of progress of Atal Bhujal Yojna was held in the Chairpersonship of Ms. Debashree Mukharjee, Secretary (DOWR, RD&GR).

- Atal Bhujal Yojana is a central sector scheme which was launched in 2019.
- Duration: Period of 5 years (2020-21 to 2024-25), Increased by 2 years in May, 2023.
- Objective: The major objective of the Scheme is to improve the management of groundwater resources in select water stressed areas in identified states.
- The scheme is being taken up in 8220 water stressed Gram Panchayats of seven states: Haryana, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh.
- Implemented Ministry: Ministry of Jal Shakti.

Scheme components : It has two major components:

- Institutional Strengthening and Capacity Building Component for strengthening institutional arrangements for sustainable groundwater management in the States including improving monitoring networks, capacity building, strengthening of Water User Associations, etc.
- Incentive Component for incentivising the States for achievements in improved groundwater management practices namely, data dissemination, preparation of water security plans, implementation of management interventions through

convergence of ongoing schemes, adopting demand side management practices etc.

- The scheme is being funded by the Government of India and the World Bank on a 50:50 basis.
- Total cost of scheme is Rs. 6,000 crore, Out of this, Rs. 3,000 is loan from the
- World Bank and Rs. 3,000 crore is matching contribution from the Government of India.

The key results areas are:

- Strengthened institutional framework and effective ground water data monitoring and disclosure.
- Improved planning and implementation of groundwater management interventions.

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Indigenous Mobile Hospital (BHISHM) Deployed in Ayodhya

- Arogya Maitri Disaster Management Cube has been deployed in Ayodhya to bolster medical readiness and response capabilities during the upcoming "Pran Pratishtha" ceremony.
- Arogya Maitri cube is a revolutionary mobile hospital equipped with cutting-edge technology.
- This cube is a part of the broader initiative named “Project BHISHM” – Bharat Health Initiative for Sahyog, Hita and Maitri.
- **Features**

- It is tailored to treat up to 200 casualties, emphasising rapid response and comprehensive care.
- The Aid Cube is equipped with several innovative tools designed to enhance disaster response and medical support during emergencies.
- It integrates Artificial Intelligence (AI) and data analytics to facilitate effective coordination, real-time monitoring, and efficient management of medical services in the field.
- The whole unit contains 72 easily transportable components that can be conveniently carried by hand, cycle, or even drone, providing unmatched flexibility.
- In the face of mass casualty incidents (MCIs), where requirements range from basic aid to advanced medical and surgical care, the Aid Cube stands out with its ability to be deployed within an astonishing 12 minutes.
- These cubes are robust, waterproof, and light, designed for various configurations, making them ideal for diverse emergency scenarios.
- From airdrops to ground transportation, the cube can be rapidly deployed anywhere, ensuring immediate response capability.
- It has advanced medical equipment, RFID-tagged for efficient repacking and redeployment.
- The state-of-the-art BHISHM software system integrated into a provided tablet allows operators to locate items quickly, monitor their usage and expiry, and ensure readiness for subsequent deployments.

Meet Hercules, world's most poisonous spider

- Discovery on the Central Coast, approximately 80 km north of Sydney, the largest male funnel web spider ever recorded, named "Hercules," has made headlines.
- Hercules spider is the largest male funnel web spider ever recorded.
- **Characteristics**

- The spider''s impressive size, measuring 3.1 inches from foot to foot.
- It is equipped with fangs capable of penetrating human nails, Hercules stands as the world''s most venomous arachnid.
- It represents the first male of such magnitude.
- Male funnel web spiders are known to be more lethal than their female counterparts.

Range:

- These are commonly found in forested regions and gardens spanning from Sydney, Australia, the coastal city of Newcastle in the north and the Blue Mountains to the west.
- Habitat: The warm and humid climate along Australia''s east coast provides an ideal breeding ground for funnel web spiders.

What is a funnel-web spider?

- These are one of the most dangerous arachnids in the world.
- There are 36 described species of Australian funnel-web spiders and they are currently placed in three genera: Hadronic, Atrax and Illawarra.
- The spider has venom, which is filled with 40 different toxic proteins.
- Its raw venom, is the best way to make life-saving antivenom.

Socialist icon Karpoori Thakur awarded Bharat Ratna, a day before centenary

- Karpoori Thakur, a prominent Gandhian socialist leader and former Bihar chief minister will be awarded the 'Bharat Ratna' posthumously.
- Bharat Ratna is the highest civilian Award of the country which was instituted in the year 1954.
- It is awarded in recognition of exceptional service/performance of the highest order in any field of human endeavour.
- The recommendations for Bharat Ratna are made by the Prime Minister himself to the President and no formal recommendations for this are necessary.

- The number of annual awards is restricted to a maximum of three in a particular year.
- On conferment of the award, the recipient receives a Sanad (certificate) signed by the President and a medallion. The award does not carry any monetary grant.

Eligibility:

- Any person without distinction of race, occupation, position or sex is eligible for these awards.
- Though usually conferred on India-born citizens, the Bharat Ratna has been awarded to one naturalised citizen, Mother Teresa, and to two non-Indians, Pakistan national Khan Abdul Ghaffar Khan and former South African President Nelson Mandela.
- The original statutes did not provide for posthumous awards but were amended in 1955 to permit them. Former Prime Minister Lal Bahadur Shastri became the first individual to be honoured posthumously.

World Neglected Tropical Diseases Day 2024

- World Neglected Tropical Diseases Day is observed every year on January 30.
- Neglected Tropical Diseases (NTDs) are a diverse group of 20 conditions/diseases that are mainly prevalent in tropical areas, where they thrive among people living in impoverished communities.
- They are caused by a variety of pathogens (including viruses, bacteria, parasites, fungi, and toxins) and are associated with devastating health, social, and economic consequences.
- These include Guinea worm, Chikungunya, Dengue, Kala Azar (Visceral Leishmaniasis), and Elephantiasis (Lymphatic Filariasis), among others, and India is home to about 12 NTDs.

- The World Health Organization (WHO) estimates that NTDs affect more than 1 billion people, while the number of people requiring NTD interventions (both preventive and curative) is 1.6 billion.
- The epidemiology of NTDs is complex and often related to environmental conditions. Many of them are vector-borne, have animal reservoirs, and are associated with complex life cycles. All these factors make their public-health control challenging.
- Global Initiative to end NTDs: The WHO's new road map for 2021–2030 calls for three strategic shifts to end NTDs:
- From measuring process to measuring impact.
- From disease-specific planning and programming to collaborative work across sectors.
- From externally driven agendas reliant on programmes that are country-owned and country-financed.

Dr Nitya Anand, man who discovered India's first oral contraceptive pill "Saheli", dies at 99

- Saheli is the world's first and only oral non-steroidal contraceptive pill.
- 'Saheli', aka Centchroman (ormeloxifene 30mg), is the only non–steroidal pill with zero side effects available in the world.
- The pill, launched by HLL in 1991, is free from side effects like weight gain, nausea, vomiting and headaches as it contains the molecule Centchroman (ormeloxifene) as the active ingredient.
- All common brands of oral contraceptive pills contain hormones like oestrogen or progesterone, or a combination of both; only Saheli is free of these steroids and hence has no side effects.
- This drug was included in the National Family Welfare Programme in 1995.

Oestrogen and Progesterone:

- Oestrogen (also called "estrogen") and progesterone are hormones that are important for sexual and reproductive development in women.

Production:

- The ovaries are a pair of ova-producing organs (that is, they produce egg cells) that maintain the health of the female reproductive system.
- In addition to their role in producing ova, the ovaries also have the distinction of being an endocrine gland because they secrete hormones—primarily estrogen and progesterone.
- They are both important for the menstrual cycle and maintenance of pregnancy in females and are combinedly prescribed in birth control pills and hormone replacement therapy for menopause.
- While they are often thought of as 'female hormones', oestrogen and progesterone are also found in men.

Padma honour for Jammu Dogri dancer, Kashmir woodcarver & Shimla vocalist

- The Union Government of India conferred Padma Shri award to Jammu's Dogri folk dancer Romalo Ram.
- Dogri folk dance is a dance performed in Duggar region of Jammu.
- It is generally performed by a group of artists whose main leader sings the song as well as dances while others are in the sitting position providing beats of Drums and Chimta.
- It is performed in functions and social gatherings.
- There are other varieties of this dance with the men and women or only women performing dance in groups to the music of some famous folk song in colourful traditional dresses.
- Dogra folk-dances have an important role as a part of worship, ceremonies and a pastime but the main force behind the folk-dances is the celebratory mood.

- Other dance forms of Jammu region: Dheku, Phummani, jagran, Ckauki, Chhajja, Kuddha, Hirana etc. are the main dances. Bhagtan, Raas , Chandrauli etc. are main folk-drama styles.

India ranks at 93 on the Corruption Index, China fares better with a rank of 76, and Denmark continues to top the index

- Corruption Perception Index (CPI) is an annual index released by Transparency International, a global civil society organisation.
- Since its inception in 1995, the Corruption Perceptions Index has become the leading global indicator of public sector corruption.
- The CPI ranks 180 countries and territories by their perceived levels of public sector corruption on a scale of zero (highly corrupt) to 100 (very clean).
- It uses data from 13 external sources, including the World Bank, World Economic Forum, private risk and consulting companies, think tanks and others.
- The scores reflect the views of experts and business people, not the public.

Highlights of CPI 2023:

- CPI-2023 results show that most countries have made little to no progress in tackling public sector corruption.
- CPI global average score remains unchanged at 43 for the twelfth year in a row.
- Denmark topped the index for the sixth consecutive year.
- Somalia was ranked last, other countries occupying the bottom spots included: Venezuela, Syria, South Sudan and Yemen.
- India has tied with Maldives, Kazakhstan, and Lesotho to rank at 93 out of 180 countries. In 2022, India was ranked at 85.
- Pakistan scored 29 with a rank of 133 and China, scored 42 occupying rank 76.