ASTRA

COMPLETE COVERAGE OF MONTHLY CURRENT AFFAIRS

JUNE 2024

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Sher Mandal

- Sher Mandal is located inside the **Purana Qila of Delhi**.
- It was built by **Sher Shah Suri in the 16th century** with **red sandstone**. Sher Shah Suri was the ruler of Bihar had managed to defeat the Mughal empire to establish his rule, until his life was cut short in an accident, paving the way for return of Humayun.
- **Rana Safvi** in his book **'The forgotten cities of Delhi'** wrote that, the emperor Sher Shah constructed Sher Mandal in **1541 AD** as a **'Jahannuma' (or reflecting the world).**

PM inaugurates Nalanda University campus in Bihar

Why in news?

- PM Modi inaugurates the new campus of Nalanda university as an **international university**, close to the site of ancient ruins of Nalanda at Rajgir in Bihar.

About Nalanda University

- Parliament established Nalanda university through **Nalalnda University Act 2010**. The act formed the basis for implementing the decisions arrived at the **2nd East Asia Summit in Philippines in 2007** for the establishment of the university as an 'international institution for intellectual, philosophical, historical and spiritual studies' and at the **4th Summit in Thailand in 2009.**
- It started functioning in 2014 from a makeshift location with 14 students and the construction work started in 2017.
- The ancient Nalanda University was established in **5th Century** and attracted students from across the world. The ancient university flourished for 800 years before it was burnt down by invaders in 12th Century.

Nalanda University

- It was **founded by Kumar gupta of the Gupta dynasty** in Bihar in the early **5th century**, and it **flourished for 600 years until the 12th century**.
- During the **era of Harshavardhan and the Pala monarchs, it rose to popularity**.
- It was a **center of learning, culture, and intellectual exchange** that had a profound impact on the development of Indian civilization and beyond.
- Nalanda was a **monastic establishment in the sense that it was primarily a place where monks and nuns lived and studied**.
- It used to **teach all the major philosophies of Buddhism**.
- It **had students from far-flung regions such as China, Korea, Japan, Tibet, Mongolia, Sri Lanka, and Southeast Asia**
- It continued to be a centre of intellectual activity up until it was **destroyed in the 12th century** AD, in 1193, by Turkish ruler **Qutb Ud Din Aibak's general Bakhtiyar Khilji**.
- After six centuries, the university was **rediscovered in 1812 by Scottish surveyor Francis Buchanan-Hamilton** and later **identified as the ancient university by Sir Alexander Cunningham in 1861.**
- The **Chinese monk Xuan Zang** has offered invaluable insights into the academic and architectural grandeur of ancient Nalanda.
- It is also a **UNESCO World Heritage Site**.

Srinagar's World Craft City Tag

Why in news?

- Srinagar has earned the **World Craft City tag** from the **World Crafts Council**, which is a **NGO**
- working to **empower artisans and safeguard craft heritage globally**.

Significance

- This will provide a **boost to the traditional linkages with Central Asia and Iran.**
- There are **14 Iranian cities** listed as craft cities by the council and, the honour for Srinagar will lead to knowledge exchange.
- This is likely to **open Kashmir's centuries old linkages** with craft centres in Central Asia and Iran.
- The Council is the modern day means and medium to put the focus on places that have been engaged in creativity and aesthetics for centuries.

A new way predict EL-Nino, La-Nina

Why in news?

- Hyderabad-based Indian National Centre for Ocean Information Services (INCOIS) has developed a new product to predict the emergence of <u>El Nino and La Nina conditions</u> up to 15 months in advance.

ENSO and its significnace

- ENSO is a climate phenomenon which involves **changes in the temperature of waters in the central and eastern tropical Pacific Ocean**, coupled with fluctuations in the overlying atmosphere. It can alter the global atmospheric circulation, which, in turn, influences weather across the world.
- ENSO occurs in **irregular cycles of 2-7 years** and has three different phases viz. **warm (El Nino), cool (La Nina), and neutral.**
- **In the neutral phase, the eastern side of the Pacific Ocean** (near the north-western coast of South America) **is cooler than the western side** (near the Philippines and Indonesia). This is due to the **prevailing wind systems that move from east to west**, sweeping the warmer surface waters towards the Indonesian coast. The relatively cooler waters from below come up to replace the displaced water.
- During El-Nino, wind systems weaken, leading to lesser displacement of warmer waters. As a result, the eastern side of the Pacific becomes warmer than usual. In the La Nina phase, the opposite happens. In India, while El Nino conditions usually lead to a weak monsoon and intense heatwaves, La Nina conditions result in a strong monsoon.

BCNN & its significance

- Known as **Bayesian Convolutional Neural Network (BCNN),** the new **product uses the latest technologies** such as Artificial Intelligence (AI), deep learning, and machine learning (ML) to improve forecasts related to the ENSO phases.
- The prediction of the model relies on the fact that **El Nino or La Nina are connected to the slow oceanic variations and their atmospheric coupling**, which gives sufficient lead time to issue early forecasts.
- It calculates the **Nino 3.4 index value** and makes the forecast.
- There are largely **two kinds of weather models** used for forecasting. One is the statistical model, which generates forecasts based on various information sets received from different countries and regions. The other is the dynamic model, which involves a 3D mathematical simulation of the atmosphere done using High Performance Computers (HPC).
- The BCNN is a **combination of the dynamic model with AI**. This helps it to forecast the emergence of El Nino and La Nina 15 months in advance.

On the Hindu Kush Himalayas Snow update

Why in news?

- The Ganga river basin reached a record low **'Snow Persistence'** in 2024. The Brahmaputra and Indus basins have suffered similarly, threatening water supply to millions of people.

About Snow Persistence

- Snow persistence is the **fraction of time snow is on the ground**. When this snow melts, it provides water to the people and ecosystems.
- In the river basins of Hindu Kush Himalaya (HKH), **snowmelt is the biggest source of water in the streams**. Overall, it contributes 23% of the runoff to the region's 12 major river basins every year.
- The Hindu Kush Himalaya mountains extend around **3500 Km over 8 countries** viz. Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Myanmar and Pakistan.
- These mountains are also called as **'Water towers of Asia'** because they are the origins of 10 crucial river systems on the continent viz. **Amu Darya, Indus, Ganga, Brahmaputra, Irrawaddy, Salween, Mekong, Yangtse, Yellow river and Tarim**.
- These river basins provide water to almost **1/4th of the world's population** and are significant source of fresh water for 240 million people in HKH region.
- In India, the snow persistence in Ganga, Brahmaputra and Indus river basins dropped significantly in 2024. The Ganga river basin noted its lowest snow persistence in 22 years, which is 17% below the historical average. The

snow persistence in Brahmaputra basin was 14.6% below normal in 2024. Snow persistence in Indus river basin is 23.3% below normal in 2024. The basin of Amu Darya (which flows through Central Asia) recorded its lowest persistence in 2024 at 28.2% below normal. The Helmand river, which is an important source of drinking water for Iran and Afghanistan was almost 32% below normal in 2024. The snow persistence in the part where Mekong river originates in the Himalaya was slightly below normal this time (The delta of Mekong river is the rice bowl of Vietnam).

Reasons for low snow persistence this year

- The **weak western disturbance** was the major reason.
- Due to climate change and global warming, this pattern is becoming increasingly unstable. The global warming increases the prolonged and intense La Nina & El Nino conditions. These phases of a recurring climate pattern across the tropical Pacific Ocean influences the global weather patterns, including western disturbance.
- Western disturbances are **low pressure systems that originate over the Mediterranean Sea, Caspian Sea & the Black sea**. It brings rain and snow to the Hindu Kush Himalaya region in winter.
- The researchers found that, the regions where this western disturbance originated experienced persistently high sea surface temperatures. This disruption weakened and delayed the arrival of the western disturbance, resulting in reduced winter precipitation and snowfall in the HKH region.

Higher snow persistence in Yellow river basin of China.

- The persistence of snow in China's Yellow river basin exceeded the normal value by 20.2% in 2024.
- The Yellow river basin is an area where the **east Asian winter monsoon brings cold, dry air from Siberia and Mongolia**. When this cold air mass interacts with moist air from other regions, particularly in the Pacific Ocean, it can result in snowfall over the higher altitudes of the upper Yellow River basin. When the cold air from east Asian winter monsoon interacts with moist air of the Pacific Ocean, it can result in snowfall at higher elevation in eastern Himalayas.

Railways to construct Canopy Bridges Across Track in Assam Gibbon Habitat

Why in news?

- The **Northeast Frontier Railway (NFR)** has set aside funds to construct canopy bridges for **India's only ape** to move across a railway track bifurcating its prime habitat in eastern Assam.

About the bridge

- The 1.65 km long rack divides the **Hollongpar Gibbon Sanctuary** in the Jorhat district of Assam.
- The gibbon which is **known for its vocalisation**, spends much of its time on the upper canopy of tall trees (mostly the hollong).
- These canopy bridges are **designed by WII in consultation with NFR.** It will be constructed at identified points to facilitate easy movement of the arboreal species b/w the two halves of the sanctuary partitioned by Mariani-Dibrugarh railway track.

Hoolock Gibbon is the only ape found in India.

- It is native to **eastern Bangladesh, Northeast India, Myanmar & S-W China**.
- Hoolock Gibbon **is unique to India's North East**. It is one of the 20 species of Gibbons on Earth.
- Western Hoolock Gibbon has a much wider range. It is found in all the state of the North East, restricted b/w south of Brahmaputra river and east of Dibang river. Outside India, it is found in eastern Bangladesh and north-west Myanmar.
- Western Hoolock Gibbon is listed as **Endangered** in IUCN Red List.

India must spend up to $395 bn for RE Goal

Why in news?

- India said it aims to ramp up non-fossil fuel capacity set by 50 GW each year to help meet its 500 GW target; Moody's, however, estimates an annual capacity addition of around 44 GW will help achieve that target

About the investments

- India will have to invest **as much as $385 billion** to meet its target of renewable energy by 2030.
- India which is a **major greenhouse gas emitter**, aims to increase the non-fossil fuel capacity by **50 GW each year** to help meet the target of 500 GW. **It missed its target of 175 GW by 2022.**
- It is estimated that, an **annual capacity of about 44 GW** will help achieve the goal.
- India will have to spend b/w **$190 billion to $215 billion** on capacity over the next 6 to 7 years and another $150 billion to $170 billion for transmission and distribution.
- The pledge to achieve carbon neutrality for India was taken by PM Modi in **COP26 in Glasgow 2021.**
- India has committed to increase solar installations by **4-fold by 2030**. Also, India has ambitious plan to source about 500 GW (nearly half of its requirement of electricity) from non-fossil fuel sources by 2030.

- The Government of India has articulated and put across the concerns of developing countries at the 26th session of the Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC) held in Glasgow, United Kingdom. Further, India presented the following five nectar elements (Panchamrit) of India's climate action:
  i.   Reach 500GWNon-fossil energy capacity by 2030.
  ii. 50 per cent of its energy requirements from renewable energy by 2030.
  iii. Reduction of total projected carbon emissions by one billion tonnes from now to 2030.
  iv. Reduction of the carbon intensity of the economy by 45 per cent by 2030, over 2005 levels.
  v.   Achieving the target of net zero emissions by 2070.
- The mantra of LIFE- Lifestyle for Environment to combat climate change was also shared in COP 26. It was statedthat Lifestyle for Environment has to be taken forward as a campaign to make it a mass movement of Environment Conscious Lifestyles. The message conveyed by India was that the world needs mindful and deliberate utilization, instead of mindless and destructive consumption.

Highway to 'Climate Hell'

Why in news?
- Acc. to a recent report of WMO, there is now an 80% chance that at least one calendar year between 2024 and 2028 would see its average temperature exceed 1.5 degree Celsius above the pre-industrial levels.

About the WMO report finding
- In **2015**, **195 countries signed the Paris Agreement**, which pledged to limit global temperatures to "well below" 2 degree Celsius above pre-industrial levels by the end of the century. It also said **countries would aim to curb warming within the safer 1.5-degree Celsius limit.**
- While the Agreement **did not mention a particular pre-industrial period**, climate scientists generally consider **1850 to 1900 as a baseline**, since it is the earliest period with reliable, near-global measurements.
- The 1.5-degree Celsius limit was chosen based on a fact-finding report, which found that breaching the threshold could lead to "some regions and vulnerable ecosystems" facing high risks, over an extended, decades-long period.
- The 1.5 degree Celsius was set as a **"defence line"**, to ensure that the world can avoid the disastrous and irreversible adverse impact of climate change, which can be seen once the average temperature increases by 2 degree Celsius above the pre-industrial levels.
- Once this threshold is breached for a long period of time, the impact of climate change such as **sea level rise, intense floods and droughts, and wildfires** will significantly increase and accelerate.
- The WMO reported that the average global temperature **reached 1.45 degree Celsius above the pre-industrial levels**. But the unusually high temperature was due to the onset of **El Niño**, an abnormal warming of surface waters in the equatorial Pacific Ocean. The El-Nino causes record-breaking surface and ocean temperatures in some parts of the world.
- El Niño has now peaked and is likely to transition towards the **cooler La Niña** in the following months. Despite this, the world is most likely to temporarily breach the 1.5-degree Celsius limit in the next five years.
- The only way to remain under the threshold is to immediately **curb the emissions of heat-trapping greenhouse gases (GHG).** To do this, the world needs to stop burning fossil fuels like coal, oil and gas, which release GHGs into the atmosphere.

IISc develops method to remove Heavy Metal Contaminants from Groundwater.

Why in news?
- Indian Institute of Science (IISc) researchers have developed a novel remediation process for removing heavy metal contaminants like **Arsenic** from the groundwater.

About the method
- It is a **3-step method** which ensures that the removed heavy metals are **disposed of in an environment-friendly and sustainable manner,** instead of sending untreated heavy metal-rich sludge to landfills from where they can potentially re-enter the groundwater.
- The IISc said that according to reports, 113 districts in 21 states in India have Arsenic levels above mg per litre while 223 districts in the 23 states have fluoride levels above 1.5 mg per litre, which are beyond the permissible limits set by the Bureau of Indian Standards (BIS) & WHO.
- These contaminants can significantly affect human and animal health, necessitating their efficient removal and safe disposal.

India ranks 2ⁿᵈ in Nitrous Oxide Emissions

Why in news?
- **India is world's 2ⁿᵈ largest source of Nitrous Oxide**, which is a greenhouse gas that heats up the atmosphere far more than the carbon dioxide.

About emissions
- About **11%** of such global man-made emissions in 2020 were from India, **topped only by China at 16%.**
- The major source of these emissions comes from **fertilizer usage**.

- In **2022**, the concentration of atmospheric Nitrous Oxide reached about **25% above the levels seen before the industrial age.** In comparison, the concentration of carbon dioxide was **417 parts per million in 2022.**
- The current level of carbon dioxide in the atmosphere is thousand times more than that of nitrous oxide. This makes reducing the carbon dioxide the biggest priority among countries trying to contain climate change.
- However, since the nitrous oxide **stays longer in the atmosphere and is rapidly increasing.** Therefore, the scientists have been warning that it must also be tackled with a great sense of urgency.
- Nitrous Oxide emissions from human activities have **increased by 40% in the past 4 decades**, with growth rates b/w 2020 & 2022 higher than in any previous period since 1980.
- Agricultural production using **nitrogen fertilizers, like ammonia and animal manure** contributed **74%** of the total anthropogenic nitrous oxide emissions in the last decade.
- The nitrous oxide emissions from human activities is responsible for **6.4% of the effective radiative forcing of the greenhouse gases**. This have added about 0.1 degree Celsius to current global warming.

Centre launches Portal to Ecologically Monitor Ganga — Environment

Why in news?
- **Union Ministry of Jal Shakti** launched an **e-flow ecological monitoring system** that allows real- time monitoring of river quality. This will help in planning and monitoring the projects, river water quality and other key parameters.

About the portal
- The **Environmental flows (E-flows) monitoring system** has been developed by **National Mission for Clean Ganga**, which is an arm of Ministry of Jal Shakti.
- Along with real-time analysis of water quality of Ganga, Yamuna and their tributaries, it also allows to monitor the activities of the Namami Gange Programme at the centre level. This includes monitoring the performance of the sewage treatment plants (STPs) and ensuring that they operate at their rated capacity. River water quality is also monitored at various locations.
- The Namami Gange programme is a flagship programme of the **Ministry of Jal Shakti**, involved in cleaning the Ganga and now includes its tributaries.
- The launch of E-flow Monitoring System marks a significant step towards **ensuring the continuous and sustainable flow of Ganga.**
- During the event, the Minister also reviewed the progress of the cleaning projects under Namami Gange programme aiming to ensure the uninterrupted flow and cleanliness of the Ganga.
- In **2018**, the Centre mandated a minimum e-flow for various stretches of Ganga to be maintained throughout the year.

New fabric found to make urban heat islands more bearable — Environment

Why in news?
- Researchers from the **University of Chicago** mentioned about a new wearable fabric that can help **urban residents survive the worst impacts of massive heat** caused by global climate change, with applications in clothing, building and car design and food storage.

About the fabric
- The material kept 2.3 degree Celsius cooler than the broadband emitter fabric used for outdoor endurance sports and 8.9 degree Celsius cooler than the commercialized silk commonly used for skirts, dresses and other summer clothing. This will help many avoid the heat-related deaths seen in the global population centres.
- Existing cooling fabric for outdoor sports works by reflecting the sun's light in a diffuse pattern so it does not blind onlookers. But in an urban heat island, the sun is only one source of heat. The sun bakes from above, thermal radiation emitted from buildings and pavement blast people living in city with too much of heat from sides and below.
- **Applications** – It can be used on the sides of the building or cars, lowering internal temperatures and reducing the cost and carbon impact of air conditioning. The material can be used to transport and store milk and other foods that would other-wise spoil in the heat.

Why in news?

- The **Gandhi Sagar Wildlife Sanctuary** will be the second home for cheetahs in India, after the Kuno National Park.

About the sanctuary

- The sanctuary is spread across an area of 368.62 sq km, in the districts of **Mandsaur and Neemuch districts in western MP**, right on the border with Rajasthan.
- The Gandhi Sagar dam, constructed on the river in **1960**, lies within the area of the sanctuary.
- **Due to the rocky terrain and exposed sheetrock, the topsoil is shallow**. This is behind **Gandhi Sagar's savanna ecosystem** comprising open grasslands interspersed with dry deciduous trees and shrubs. The riverine valleys, however, are evergreen.
- The landscape has much promise. It looks like **Maasai Mara** (a national reserve in Kenya known for its savanna wilderness and wildlife including lions, giraffes, zebras, hippos, elephants, and, of course, cheetahs). Gandhi Sagar has the best habitat for the cheetahs (in India) after Kuno.
- **Male cheetah siblings form coalitions comprising three to five members, whereas females live more solitary lives** (unless they are with their litter). On average, a cheetah coalition is expected to make a kill every 3-4 days.
- According to a Wildlife Institute of India, "considering the finite growth rate of ungulates to be approx. 1.33, a population of about 350 ungulates are required for a single cheetah coalition family". Ungulates are members of a diverse clade of animals, primarily consisting of big mammals with hooves (like deer).
- Similar to Kuno, **the leopard population in Gandhi Sagar will pose a threat to cheetahs**, with the two feline predators competing for the same prey, and possibly even clashing with each other in wild encounters.
- Unlike Kuno, highways and human habitation pass right outside the boundary of the protected area in Gandhi Sagar.

Strategic imperative and Environment Concern in Great Nicobar project

Why in news?

- The environment groups described the proposed ₹72,000 crore infra upgrade at the Great Nicobar Island as a "grave threat" to the island's indigenous inhabitants and fragile ecosystem.

About the project

- The Great Nicobar Island Project was **unveiled by NITI Aayog in March 2021**.
- It is a ₹72,000 crore plan called '**Holistic Development of Great Nicobar Island at Andaman and Nicobar Islands**'.
- The mega infrastructure project is proposed to **construct an International Container Transshipment Terminal (ICTT),** a **greenfield international airport** with a peak hour capacity to handle 4,000 passengers, a **township**, and a **gas and solar based power plant** spread across 16,610 hectares.
- It is being **implemented by the Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO).**
- The mega infrastructure project which is being implemented by the **Andaman and Nicobar Islands Integrated Development Corporation (ANIIDCO),** is proposed to include an **International Container Transhipment Terminal (ICTT)**, which is a greenfield international airport with a peak hour capacity to handle 4,000 passengers, a township, and a gas and solar based power plant spread across 16,610 hectares.
- The project for the "holistic development" of Great Nicobar Island was implemented after a report by NITI Aayog.
- It is close to the **Malacca Strait**, which is the **main waterway that connects the Indian Ocean to the Pacific**, and the ICTT is expected to allow Great Nicobar to participate in the regional and global maritime economy by becoming a major player in cargo transhipment.
- The site for the proposed ICTT and power plant is **Galathea Bay** on the **southeastern corner of Great Nicobar Island**, where there is no human habitation. The project was granted in-principle forest clearance and environmental clearance in October 2022.

Benefits of the project

- **Transshipment Terminal**: The construction of an international transshipment terminal will position Great Nicobar as a major player in the global maritime economy, leveraging its proximity to the Malacca Strait , one of the world's busiest sea routes.
- **Increased Trade Opportunities**: Enhanced port facilities will enable increased participation in regional and global trade, potentially attracting more shipping companies and boosting economic activities.
- **Employment Opportunities**: The project is expected to create numerous jobs during both the construction and operational phases, benefiting local communities and migrants.
- **Skill Development**: Opportunities for local workforce training and skill development in various sectors including construction, maritime services, and tourism.
- **International Airport**: The construction of an international airport will facilitate easier access to the island, potentially increasing tourist inflows.
- **Enhanced Transport Links**: The development of port and airport infrastructure will significantly improve connectivity to mainland India and other global destinations.
- **Better Access for Goods and Services**: Improved transport facilities will facilitate the movement of goods and services, enhancing the overall quality of life for residents.
- **Power Plant**: Establishment of a new power plant will ensure a reliable supply of electricity, supporting both residential needs and industrial activities.
- **Modern Amenities**: Development of a township with modern amenities can improve living standards and attract more skilled professionals to the region.

Strategic Importance

- The Bay of Bengal and Indian Ocean region are of vital strategic and security interest to India as the China is expanding its footprint across the region.
- India is worried of the build-up of Chinese maritime forces at the Indo-Pacific choke points of especially Malacca, Sunda, and Lombok.
- China is attempting to expand its footprint in the region by building a military facility at Coco Islands (Myanmar) lying just 55 km to the north of the Andaman & Nicobar Islands.
- Close surveillance of the entire area around the archipelago, and the building up of a strong military deterrence at Great Nicobar is of vital importance to India's national security.

Environmental Challenges

- The infra project poses threat to the ecology of the islands. It can have potentially devastating impact on the **Shompen**, **a particularly vulnerable tribal group (PVTG)** of hunter-gatherers with an estimated population of a few hundred individuals who live in a tribal reserve on the island.
- The port project will destroy coral reefs and pose a threat to the **terrestrial Nicobar Megapode bird and leatherback turtles** who nest in the Galathea Bay area.
- The proposed port is in a seismically volatile zone that saw permanent subsidence of about 15 ft during the 2004 tsunami.

India's largest Leopard Safari opens at Bannerghata   **Environment**

Why in news?

- **South India's first and the country's largest leopard safari** was inaugurated at the Bannerghatta Biological Park (BBP).

About the Leopard Safari

- An area of 20 hectares has been demarcated and fenced for the safari.
- Bannerghatta is home to a good population of free ranging leopards (Panthera pardus).
- The leopard safari area is made up of **undulating terrain with natural rocky outcrops and semi- deciduous forest.**
- Four acres within the safari area have been separated, using a solar fence, to help these animals acclimatise to their new environment.

Why in news?

- India's installed RTS capacity increased by 2.99 GW in 2023-2024, the highest growth reported in a year. As of 31st March 2024, the total installed RTS capacity in India was 11.87 GW.

About the potential

- The Indian government launched **the Jawaharlal Nehru National Solar Mission in January 2010**. It was the first major initiative to promote the growth of solar energy. The main objective was to produce 20 GW of solar energy (including RTS) in three phases: 2010-2013, 2013-2017, and 2017- 2022.
- In 2015, the government revised this target to **100 GW by 2022**, including a 40 GW RTS component, with specific yearly targets for each State and Union Territory.
- In December 2022, India achieved an installed RTS capacity of about 7.5 GW. It extended the deadline for the 40 GW target to 2026.
- India's overall RTS potential of India is approximately **796 GW. The full RTS potential of several States is yet to be fully tapped.** In order to meet India's ambitious target of installing **500 GW of renewable energy capacity (with a solar component of 280 GW) by 2030** and its larger **net-zero goals by 2070**, the RTS alone needs to contribute about 100 GW by 2030.
- As of March 31, 2024, **Gujarat, Maharashtra, and Rajasthan** have taken big strides in RTS capacities.
- However, Uttar Pradesh, Bihar, and Jharkhand (among others) are yet to fully explore their RTS potential. The challenges here include bureaucratic hurdles, inadequate infrastructure, and lack of public awareness.
- The '**Pradhan Mantri Surya Ghar: Muft Bijli Yojana**' is a flagship initiative to fit **1 crore households with RTS systems** and help them get up to **300 units of free electricity** every month. The scheme has a financial outlay of **Rs 75,021 crore**. The scheme also encourages the **adoption of advanced solar technologies, energy storage solutions, and smart grid infrastructure** to enhance the efficiency, reliability, and resilience of RTS installations.

Steps to be taken to ensure RTS growth –

- Creating awareness is key to getting consumers on board.
- RTS needs to be economically viable for households. While government subsidies are helping lower the total cost for households, multiple low-cost financing options are required.
- Promoting R&D in solar technology, energy storage solutions, and smart-grid infrastructure can drive down costs, improve performance, and enhance the reliability of RTS systems.
- Investments in training programmes, vocational courses, and skill development initiatives will help

Why in news?

- The **mainland serow**, a mammal that looks like somewhere **between a goat and an antelope**, has been recorded at the lowest elevation beyond Bhutan, its natural home.

About the mammal

- A team of scientists recorded a lone **mainland serow (**Capricornis sumatraensis thar**)** at 96 metres above the mean sea level in **western Assam's Raimona National Park.**
- The elusive animal has been found for the first time within a radius of 1 km from a human habitation.
- According to the IUCN, the mainland serow inhabits areas at altitudes of **2000-3,000 metres**. The animal habitat is across the **India-Bhutan border in Phibsoo Wildlife Sanctuary and the Royal Manas National Park** in the Himalayan country. The main land serow is listed as **Vulnerable** in IUCN red list & is also mentioned in Appendix-1 of CITES.
- There are three other species of the animal – **Japanese serow, red serow** (found in eastern India, Bangladesh, and Myanmar), and **Taiwan or Formosan serow.**
- The animal is distributed **from the Himalayan belt to southern China and Sumatra** but its populations are fragmented, isolated, and rapidly declining due to poaching and habitat loss.
- The Assam government declared the 422 sq. km Raimona a national park in **2021.**

Why in News?

- **World Day to Combat Desertification and Drought** is observed every year on the 17th of June.

Theme :

- "**Her Land. Her Rights**"

Objective

- Which focuses on women's land rights, essential for achieving the
- interconnected global goals of gender equality and land degradation neutrality by
- 2030 and contributing to the advancement of several other Sustainable Development Goals (SDGs).

Desertification

- Desertification, along with climate change and the loss of biodiversity, were identified as the greatest challenges to sustainable development during the 1992 Rio Earth Summit.
    - Two years later, in 1994, the UN General Assembly established the United Nations Convention to Combat Desertification (UNCCD), the sole legally binding international agreement linking environment and development to sustainable land management and declared 17 June "**World Day to Combat Desertification and Drought**".
    - Later on, in 2007, the **UN General Assembly declared 2010-2020 the United Nations Decade for Deserts and the fight against Desertification** to mobilise global action to fight land degradation, led again by the UNCCD Secretariat.

Indian Initiatives:

- Integrated Watershed Management Programme, since 2009-10
- Desert Development Programme
- National Mission on Green India

Global Initiatives:

- **Bonn Challenge:**
    - The **Bonn Challenge** is a global effort to bring 150 million hectares of the world's **deforested and degraded land into restoration by 2020, and 350 million hectares by 2030.**

Why in news?

- The Delhi High Court has held that the Chief Information Commissioner (CIC) has no jurisdiction to comment on the utilization of **Members of Parliament Local Area Development Scheme (MPLADS)** funds by MPs as the scope of RTI Act is limited to providing access to the information under the control of public authorities.

About the CIC jurisdiction

- The CIC in its 2018 order observed that, **some MPs were deliberately accumulating their MPLADS funds for the last year of their term to gain an advantage during elections**. It had suggested to the Ministry of Statistics & Programme Implementation (MoSPI) that this abuse of the funds must be prevented and guidelines be implemented for distributing the money equally for each year of the 5-year term.
- The MoSPI challenged the order of the CIC in the Delhi HC. The ministry accused the CIC of exceeding its jurisdiction by commenting on the action taken by MPs in spending their MPLADS funds.
- The court also held that, acc. **to Section 18 of the RTI Act**, the CIC can only deal with issues relating to the information sought or any other issue relating to the dissemination of information.

- **Members of Parliament Local Area Development Scheme (MPLADS)**
- MPLADS is a scheme formulated by government in **1993** that enables the members of parliaments (MP) to **recommend developmental work in their constituencies** with an emphasis on creating durable community assets based on locally felt needs.
- It is administered by **Ministry of Statistics and Programme Implementation (MoSPI).**
- Elected Members of Rajya Sabha representing the whole of the State, may select works for implementation in one or more district(s) as they may choose.
- Nominated Members of the Lok Sabha and Rajya Sabha may also select works for implementation in one or more districts, anywhere in the country.
- MPs can also recommend work of up to **Rs. 25 lakhs per year outside their constituency or state of election** to promote national unity, harmony and fraternity. MPs can recommend work of up to **25 lakh for Natural Calamity in the state and up to 1 crore in the country in case of Calamity of Severe Nature**
- **Each MP is allocated 5 crore per year since 2011-12.** MoSPI disburses funds to district authorities, not directly to MPs. This annual entitlement is released conditionally in **two instalments of 2.5 crore each**. Funds are **non-lapsable in nature** i.e. in case of non-release of fund in a particular year it is carried forward to the next year.
- MPs need to recommend work worth at least **15% and 7.5% of their funds** to create assets in areas inhabited by Scheduled Castes (SCs) and Scheduled Tribes (STs) respectively.
- The role of an MP is, however, **limited to the recommendation** of a project. It is the responsibility of the **district authority** to sanction, execute and complete the recommended project within a particular timeframe.

Why in news?

- The Competition Commission of India has proposed new rules to monitor the settlements and commitments of industry giants. This is aimed to **enhance regulatory oversight and compliance.**

Frame work for appointment of independent agencies

- The latest draft regulations propose to **bring in transparency and accountability** for the technology sector.
- The draft regulations have introduced a **comprehensive framework for appointment of independent agencies** to oversee the implementation of the orders of the CCI. This move aims to ensure the industries adhere to their commitments and don't exploit the loopholes to evade regulatory security.
- The proposed regulations empower the CCI to **appoint a range of independent agencies**, including accounting firms, management consultancies, professional organisations and individuals like Charter Accountants, company secretariat etc.
- These independent agencies will be given the **responsibility to monitor the implementation of the orders of CCI** and ensure that the terms of engagement are strictly followed.
- The independent agencies must **confirm their independence by disclosing potential conflicts of interest**, in order to maintain integrity and impartiality.

- These agencies will **ensue that the orders of the CCI are implemented**. They must inform the CCI of the **instances of the non-compliance and disclose any direct or indirect pecuniary or non-pecuniary interest,** that could prejudice their performance and submit periodic reports related to monitoring of order compliance, as directed by the commission.
- These agencies should **maintain the highest standard of confidentiality**, regarding any information received during the discharge of their obligations and will perform any other duties as stipulated by the CCI.

No challenge in court
- The CCI will have the power to **suspend the engagement of these agencies** if they fail to meet the stipulated standards. This can be done in accordance with the terms of their engagement or if deemed necessary by the CCI (reasons to be recorded in writing)
- Any such revocation by the CCI **can't be challenged in any court of law.**
- Payment to monitoring agencies should be made by the person who has filed an application, under the regulations of CCI (CCI Regulations 2024). In case the application is filed under Combination Regulation, the payment responsibility will lie with the appropriate person as directed by the CCI.
- This will ensure that the financial burden don't fall on CCI, but on the parties seeking settlement.

Consequences on Big-tech companies
- The proposed regulation is a landmark shift in monitoring regulatory compliance for tech companies in India.
- The CCI aims to **prevent big-tech firms from circumventing regulatory provisions**, by instituting a robust and independent monitoring mechanism. This will ensure that they adhere to their commitments.

Special Category Status for Andhra   Polity & Governance

Why in news?
- The Andhra Pradesh Reorganisation Act 2014 bifurcated Andhra Pradesh into 2 states. There was **no mention in the act of giving a special category status (SCS)** to Andhra Pradesh.

About special Category status
- The PM Modi-led NDA government refused to accept the SCS for Andhra. It was said that, Andhra does not qualify for the SCS as per the norms and because of the dissolution of Planning Commission in 2014. **The 14th Finance Commission had equated SCS with the general category status and had annulled SCS for new states.**
- The concept of SCS was brought into existence by the **recommendations made by 15th Finance Commission in 1969**. It was done to benefit few states by giving them special grants by the centre. The focus was on the states that had **socio-economic issues & geographical disadvantages** like hilly states.
- There are **5 factors** which are required to be qualify to be granted SCS – states that comprise majority tribal population, low density of population, hilly states and close to international borders, states that have socio-economic and industrial backwardness and lack of adequate state finaces. At present, the states that have SCS include **Arunachal, Assam, Himachal Pradesh, J&K, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura & Uttarakhand.**
- The centre offered a special package to Andhra Pradesh.
- The special package included recognition of the **Polavaram irrigation project as a national project** with full funding from the Union Government.
- <u>Reasons behind Andhra Pradesh seeking for special package</u> - Since the bifurcation of state, it has been facing a revenue deficit. Most of its projects and development have stopped and also building for a new greenfield capital at Amravati is pending and needs funding.

> **Special Category Status**
> - **It was introduced in 1969** on the recommendations of the **Fifth Finance Commission** (chaired by Mahavir Tyagi) to benefit certain backward states.
>   - At that time, this was provided to **Assam, Jammu and Kashmir and Nagaland**.
> - The idea of SCS was first formalised in April 1969 when the **Gadgil formula** of fund allocation was cleared by the National Development Council (NDC).
>   - On the basis of this formula, more states were given the SCS when they attained statehood.
>   - These include Himachal Pradesh in 1970-71, Manipur, Meghalaya and Tripura in 1971-72; Sikkim in 1975-76; Arunachal Pradesh and Mizoram in 1986-87 and Uttarakhand in 2001-02.

Benefits
- Benefits to these states included getting Central assistance of as much as **90% in the form of grants and 10% loan** for centrally sponsored schemes.
- **For Non-SCS**, the Normal Central Assistance was calculated as 30% grant and 70% loan.
- SCSs were also provided **Special Plan Assistance** for projects of special importance to the state.
- Further, u**nspent funds** do not lapse at the end of the financial year.
- They also get **tax concessions** although many tax benefits have now been subsumed under the goods and services tax regime

Powers of the Speaker   Polity & Governance

Why in news?
- The TDP and JD(U), key allies of the BJP in the NDA, are said to be jockeying for the post of Speaker.

About the powers of Speaker
- The Speaker is the Principal Presiding Officer of the Lok Sabha.
- He/she is chosen by the House from among its members by a simple majority of members present and voting.
- Within the walls of the House his/her authority is supreme, which is based on his absolute and unvarying impartiality.
- The Speaker represents the collective voice of the House. The Speaker enjoys vast authority and powers, under the Constitution and the Rules, as well as inherently. The Speaker is the guardian of the rights and privileges of the House, its Committees and the members.
- The Speaker is also the ultimate arbiter and interpreter of all those provisions which relate to the functioning of the House. For this, the Speaker is invested with wide disciplinary powers under the Rules.
- The Speaker's conduct cannot be discussed except on a substantive motion.
- The Speaker decides on the admissibility of notices of questions, motions, resolutions, Bills, amendments, etc and no business may be brought up before the House without Speaker's consent.
- The Speaker regulates the debates and proceedings of the House and is charged with the maintenance of order in the House.
- The Speaker enforces the observance of rules by the members and may direct any member guilty of disorderly conduct to withdraw from the House and name him for wilful disregard of the authority of the Chair or obstruction of the proceedings.
- The Speaker may also adjourn or suspend the business of the House in case of grave disorder.
- The Speaker also determines the question as to whether the members of the House have become subject to disqualification on ground of defection in terms of the Tenth Schedule to the Constitution.
- All the Committees of the House function under the overall control and direction of the Speaker.
- The Speaker nominates their Chairmen and issues such directions as may be considered necessary pertaining to the procedure to be followed in the Committees.
- The Business Advisory Committee, the General Purposes Committee and the Rules Committee work directly under the Speaker's Chairmanship.
- The Speaker enjoys a special position insofar as the relations between the two Houses of Parliament in certain matters are concerned.
- The Speaker certifies the Money Bills and has the final say on money matters.
- The Speaker presides over the joint sitting called in the event of a disagreement between the two Houses on a legislative measure.
- Though a member of the Lok Sabha, the Speaker does not vote in the House except on those rare occasions when there is a tie at the end of a decision.

Lok Sabha Deputy Speaker
- The members of the Lok Sabha elect the Deputy Speaker from amongst themselves who presides over the deliberations of the House during the absence of the Speaker.
- The Deputy Speaker is vested with the same powers as the Speaker when presiding over a sitting of the House.
- The Deputy Speaker, on being the member of a Parliamentary Committee, is appointed as the Chairman of that Committee.

- He, unlike the Speaker, can speak in the House, take part in its deliberations and vote as a member on any question before the House, but he can do so only when the Speaker is presiding.

Role of Pro-tem Speaker
- As per the second proviso to Article 94 of the Constitution, the office of the Speaker becomes vacant immediately before the first meeting of the new Lok Sabha.
- In that case, the duties of the Speaker are to be performed by a Member of the House appointed for this purpose by the President as Pro-tem Speaker.
- Normally, the seniormost members (in terms of number of years of membership of the House) are generally chosen for the purpose, even though there have been exceptions to this practice.
- As soon as the new government is formed, a list of the seniormost Lok Sabha members is prepared.
- The list will indicate their seniority in terms of their tenure in the Lok Sabha as well as in the Rajya Sabha. The list is then submitted to the Minister of Parliamentary Affairs/Prime Minister for identifying a member as Pro-Tem Speaker.
- After the approval of the Prime Minister, the minister submits a note to the President seeking his/her approval to the appointment of the Pro-tem Speaker.
- The President administers the oath to the Pro-tem Speaker in the Rashtrapati Bhawan.
- Three other members are also appointed by the President to assist Pro-tem Speaker in administering the oath/affirmation. They are administered the oath/affirmation by the Pro-tem Speaker in the Lok Sabha.
- The Pro-tem Speaker then administers the oath/affirmation to the newly elected members with the help of the three persons so appointed by the President.
- The Pro-tem Speaker continues in office till the Speaker is elected.

UGC has allowed Admissions Twice a year — Polity & Governance

Why in news?
- The UGC has allowed universities to admit students twice a year i.e. **in July/August & January/February.**

About the UGC decision
- The UGC has said, the bi-annual admissions will give universities the **flexibility to take a decision on their admission cycle** based on infrastructure and faculty available.
- It is **not mandatory** for universities to adopt the new system.
- The UGC's decision will allow universities to admit students in 2 cycles for **undergraduate, postgraduate and PhD programmes**.
- The new system can allow universities to reflect the admission cycles in some countries that admit students twice a year, and where the courses that are available in these different admission cycles may also vary. The universities in US have admission in August/September and then in January.
- The UGC has **already attempted the biannual admission process for open and distance learning and online programmes.**
- This can benefit students who may have missed admissions in July/August session due to health issues, delay in board exam results or personal reasons.
- This system can also help **increase the Gross Enrollment Ratio (GER)**. For higher education, the GER is the ratio of students enrolled to the population of the age group eligible for higher education.

CIC upholds response to RTI query on Presidential Assent — Polity & Governance

Why in news?
- The Central Information Commission has upheld the response of the Rashtrapati Bhavan to a RTI query on the number of times former president Ram Nath Kovind returned any decision taken by the Union council of ministers for reconsideration. The President's secretariat had responded that no information was available on record.

Right to Information (RTI)
- RTI is a fundamental right under Article **19(1)(a)** of the Indian constitution.
- It has replaced **Freedom of Information Act 2002.**
- **Section 4 of RTI Act** imposes obligation upon the public authorities to maintain its records in a manner and form which facilitates the right to information under the act.

- **Section 6 of the Act** entitles any person who want information, to make a written request to the Central or State Public Information Officer specifying the particulars of the details sought by him.
- **Section 7 of the Act** empowers the Public Information Officer to either provide the info or reject the application (under provisions of Section 8 & 9) within 30 days of the receipt of request.
- **Section 19 of the Act** state that, if any person does not receive the information sought within 30 days or he is not satisfied with reply of the Public Information Officer, then he can go for an appeal to an officer who is senior in rank to the PIO.
- Information pertaining to internal security, relations with foreign nations, intellectual property rights, cabinet discussions are exempted from RTI.

- All bills passed by the parliament can become laws only after receiving the assent of the president per Article 111. The president has the power of veto, as a result when a bill is presented to the president, then he can **give his assent to the bill, withhold his assent from it or can return a bill to parliament, if it is not a money bill, for reconsideration**. If the parliament, after reconsideration, passes the bill again and present it to the president, with or without amendments, the president cannot withhold their assent from it. In case of an ordinary bill, the president can either give his assent, withhold his assent or can return the bill for reconsideration. The Houses may amend the bill or not before returning it to the President for assent. In case of money bill, The President can give his assent or withhold assent to a Money Bill. However, a Money Bill cannot be returned by the President to the parliament for reconsideration under the Indian Constitution. Suspensive veto is not valid in case of money bill. In case of Constitutional Amendment Bill, the President's assent is mandatory. The President cannot withhold or return such bills.

IRDAI improves Health Cover Experience   Polity & Governance

Why in nenws?
- IRDAI made a latest reform whereby it stated that, **no claim can be rejected due to the lack of documents.** To simplify the claim process, IRDAI mandated the necessary documents to be sought by the insure at the time of underwriting.

About health cover
- The customers of general insurers are now allowed to **cancel policy anytime and be refunded for the unexpected policy period**, while insurers can only cancel the policy on the grounds of fraud.
- IRDAI directed that, cashless authorisation by the insurer has to be made **within 1 hour of the request of the claim.**
- The IRDAI circular also mandated that, **all insurers should strive to achieve 100% cashless claim settlement in a time-bound manner** and ensure claim settlement through reimbursement mode is done only in exceptional circumstances.
- It added that the ratio of reimbursements claims should be kept to the bare minimum.
- The directive is in line with **IRDAI's recent 'Cashless Anywhere' directive** which asked insurers to settle claims in cashless mode even in those hospitals which are not in their list of network hospitals.
- The IRDAI also said that, if required, the insurers could put in place **dedicated help desks at hospitals** to deal with cashless claim requests within stipulated time frame.
- The health insurers should provide **digital-pre authorisation to policy holders** to facilitate the claims. To address this, the IRDAI said in case the claim is not settled in 3 hours, **any additional costs charged by the hospital would be borne by the insurer form the shareholder's fund.**
- The only way this directive can be implemented is through better coordination b/w insurers and hospitals.
- The IRDAI also held that, if the policyholder dies during treatment, **the insurer must immediately process the request for claim settlement and get the mortal remains released** from the hospital immediately.

Why in news?

- The **Public Examinations (Preventions of Unfair Means) Act 2024** came into effect.

About the law

- **Exams covered by the law:**
  - Public examinations refer to examinations conducted by authorities specified under the Schedule to the Act, or notified by the central government. These include:
    - **(i) Union Public Service Commission,**
    - **(ii) Staff Selection Commission,**
    - **(iii) Railway Recruitment Board,**
    - **(iv) National Testing Agency,**
    - **(v) Institute of Banking Personnel Selection, and**
    - **(vi) Departments of the central government and their attached offices for recruitment.**
- **Offences in relation to public examinations:**
  - The Act defines several offences in relation to public examinations.
  - It **prohibits collusion or conspiracy** to facilitate indulgence in any unfair means.
  - It **specifies unfair means** to include: (i) unauthorised access or leakage of question paper or answer key, (ii) assisting a candidate during a public examination, (iii) tampering with computer network or resources, (iv) tampering with documents for shortlisting or finalising of merit list or rank, and (v) conducting fake examination, issuing fake admit cards or offer letters to cheat, for monetary gain.
  - It also **prohibits**: (i) disclosing exam-related confidential information before time, and (ii) unauthorised people from entering exam centres to create disruptions.
- **Punishment:**
  - Above offences will be punishable with **imprisonment between three and five years, and a fine up to Rs 10 lakh.**
  - An offence by a **service provider** will be **punishable with a fine of up to one crore rupees.**
  - A service provider is an organisation that provides computer resources or any other support to a public examination authority.
  - **Proportionate cost of examination** will also be **recovered** from such a service provider. Further, they will also be **barred from conducting public examinations for four years.**
  - All offences under the Act shall be **cognizable, non-bailable, and non-compoundable.**
- **Organised crimes:**
  - The Act specifies a **higher punishment for organised crimes.**
  - An organised crime is defined as an unlawful act committed by a person or a group of persons to further a shared interest for wrongful gain in relation to public examinations.
  - Persons committing an organised crime will be punished with **imprisonment between five years and 10 years, and a fine of at least one crore rupees.**

Why in news?

- The Kerala assembly passed a resolution proposing a constitutional amendment to change the name of the state to Keralam.

About the resolution

- The resolution called for invoking Article 3 of the constitution to cause this change in the First Schedule.
- **Article 3** of the Indian Constitution deals with the formation of new States and alteration of areas, boundaries or names of existing States.
- **In this regard, the Parliament may by law:**
  - form a new State by separation of territory from any State or by uniting two or more States or parts of States, or by uniting any territory to a part of any State;
  - increase the area of any State;

- diminish the area of any State;
- alter the boundaries of any State;
- alter the name of any State;
- **However, there are two conditions in this regard:**
  - A bill, for this, can be introduced in the Parliament **only with the prior recommendation of the President;**
  - The President has to refer the same to the state legislature for expressing its views within a specified period (though the President or Parliament is not bound by the views of the state legislature). In the case of a union territory, no reference need be made.
- It is, thus, clear that the **Constitution authorises the Parliament to form new states or alter the areas, boundaries or names of the existing states without their consent**. In other words, the Parliament can redraw the political map of India according to its will. Therefore, India is rightly described as 'an indestructible union of destructible states'.
- The first schedule of the Indian constitution includes the list of various states.

Maternity leave for parents of child born through surrogacy — Polity & Governance

Why in news?
- Centre has notified amended rules to allow women government employees to take **180 days** of maternity leave in case they have children through surrogacy.

About the Maternity leave
- The government has also allowed the '**commissioning mother**' (the intending mother of the child born through surrogacy) **childcare leave** and the '**commissioning father**' paternity leave of **15 days.**
- In case of surrogacy, the surrogate, as well as the commissioning mother with less than 2 surviving children, may be granted maternity leave of 180 days, in case either or both of them are government servants.
- In case of a **child begotten through surrogacy**, the commissioning father who is a male government servant with **less than 2 surviving children** may be granted **paternity leave of 15 days** within the period of **6 months from the date of delivery of the child**.
- The commissioning mother with less than 2 surviving children may be granted child care leave.
- The existing rules allow a **female government servant and single male government servant child care leave** for a maximum period of **730 days** during the entire service.
- The surrogate mother shall mean the women who bears the child on behalf of the commissioning mother. And 'commissioning father' would mean the intending father of the child born through surrogacy.

Maternity Benefit Act 2017:
- The Maternity Benefit Act 2017 amended the Maternity Benefit Act 1961. The amendment increases the **duration of paid maternity leave** available for women employees from the existing **12 weeks to 26 weeks** thereby giving more **time cushion** in times of motherhood along with **financial stability.**
- The Act also introduces provisions for **work from home for women** improving the **work-life balance** and ensuring **adequate time for parenthood.**
- It requires companies with **at least 50 employees to provide crèche facilities** within a prescribed distance making workplaces **women-friendly and gender-just.**
- The Act applies to **all establishments employing 10 or more persons**, and to every woman who has worked in that establishment for **a minimum of 80 days during the previous 12 months** thereby ensuring that such **benefits are not denied and preventing any discrimination.**

Lok Sabha to witness rare contest for Speaker's post — Polity & Governance

Why in news?
- The 18th Lok Sabha is witnessing a rare contest for the Speaker post between the BJP's Om Birla and K Suresh of the Congress after the NDA government and the INDIA group of Opposition parties failed to arrive at a consensus.

About the election of speaker
- In independent India, there are only three instances — **in 1952, 1967 and 1976** — when there was a voting for the Speaker's post.

- The election of the Speaker is governed by **Article 93** of the Constitution. The post becomes vacant just before the new Lok Sabha convenes. Before the session begins, **the President appoints a Pro- tem Speaker** to administer the oath to the newly elected Members of Parliament (Mps). The Speaker is elected by a **simple majority**, meaning that the candidate who receives more than half of the votes from the members present in the house becomes the Speaker.

Union Home Ministry tests eSakhsya app — Polity & Governance

Why in news?

- The Union Ministry of Home Affairs (MHA) is testing **eSakshya (e-evidence)**, a mobile-based application to **help police record scene of crime, search and seizure in a criminal case and upload the file on the cloud-based platform.**

About the app

- The police official will have to **upload a selfie after the procedure is complete**.
- Each recording could be maximum **4 minutes** long and several such files could be uploaded for each FIR, according to the details shared with State police departments.
- The Bharatiya Nyaya Sanhita (BNS) has replaced the Indian Penal Code, 1860, the Bharatiya Sakshya (BS) has replaced the Indian Evidence Act, 1872 & the Bharatiya Nagarik Suraksha Sanhita (BNSS) has replaced the Code of Criminal Procedure, 1898.
- The BNSS mandates **compulsory audio-video recording** of search and seizure in each criminal case and mandatory forensic examination in all cases where an offence attracts punishment of seven years or more.
- It will help **uniformity in investigations by procuring hardware and cloud space**, thereby increasing the conviction rate.
- The mobile application developed by the **National Informatics Centre (NIC)** will be available to all police stations which register and download the App.

Leader of opposition in Lok Sabha — Polity & Governance

Why in news?

- Rae Bareli MP Rahul Gandhi is Leader of Opposition in Lok Sabha, a position that lay vacant for 10 years because no party had numbers equalling **a tenth (1/10th) of the strength of the House**, which has been by practice a requirement to lay claim to the post.

About the LOP and his role

- The position of Leader of Opposition was officially described in **The Salary and Allowances of Leaders of Opposition in Parliament Act, 1977.** The Act describes the Leader of Opposition as a "member of the Council of States or the House of the People, as the case may be, who is, for the time being, the Leader in that House of the party in opposition to the Government having the greatest numerical strength and recognised as such by the Chairman of the Council of States or the Speaker of the House of the People".
- The Speaker is required to recognise the leader of the numerically largest party in opposition as the leader of opposition.
- The Leader of Opposition sits in the front row to the left of the Chair, and enjoys certain privileges on ceremonial occasions like escorting the Speaker-elect to the rostrum.
- The Leader of Opposition is also entitled to a seat in the front row during the Address by the President to both Houses of Parliament.
- The main duty of the Leader of Opposition is to **serve as the voice of the opposition in the House.**
- The Leader of Opposition in Lok Sabha "is considered as a **shadow Prime Minister with a shadow Cabinet**, ready to take over the administration if the Government resigns or is defeated on the floor of the House.
- Since the parliamentary system is based on **"mutual forbearance"**, the Leader of Opposition lets the Prime Minister govern and is, in turn, permitted to oppose.
- Most importantly, the Leader of Opposition is the **opposition's representative in the high powered committees headed by the Prime Minister** for appointment to key posts such as the Director of CBI, the Central Vigilance Commissioner and Chief Information Commissioner, the Chairperson and Members of the National Human Rights Commission, and the Lokpal.

- In order of precedence, the Leaders of Opposition in Lok Sabha and Rajya Sabha come at **No. 7**, along with Union Cabinet Ministers, the National Security Advisor, the Principal Secretary to the PM, the Vice-Chairperson of the NITI Aayog, former PMs, and Chief Ministers.

NCPCR to felicitate 30 district officials for containing drug abuse among school children

Economy

Why in news?
- The National Commission for Protection of Child Rights (NCPCR) will felicitate 30 top performing districts in the country for the successful implementation of a Joint Action Plan to contain substance abuse among school children.

About the NCPCR
- The event will be held on the sidelines of a national review and consultation organised jointly by the NCPCR and the Narcotics Control Bureau (NCB) on the **'Joint Action Plan on Prevention of Drugs and Substance Abuse and Illicit Trafficking'**.
- The Joint Action Plan (JAP) was developed by the **NCPCR and the NCB** based on deliberations with the concerned Ministries in 2021. It streamlines efforts made by different agencies to bring paradigm shifts in prevention.
- The Joint Action Plan (JAP) was developed by the NCPCR and the NCB based on deliberations with the concerned Ministries in 2021.
- It streamlines efforts made by different agencies to bring paradigm shifts in prevention.
- The JAP is a framework to **protect children from drug abuse, stop the sale of drugs in areas surrounding educational and children care institutions & prevent the reach of pharmaceutical drugs and other goods used as intoxicants by children.**
- Representatives of the Commission for Protection of Child Rights of States and Union Territories, as well the Departments of Women and Child Welfare, Health, Education, Police, Drugs Controller, Excise, Pharmacy Councils, and State AIDS Control Societies will participate in the consultation.
- A new portal called **'Prahari' (sentry)** will also be launched. Through this portal, quarterly activities for awareness on drugs and substance abuse in schools will be conducted by children and teachers nominated by special 'Prahari' clubs,". 'Prahari' clubs are associations managed and run by children to achieve common goals.
- The **National Commission for Protection of Child Rights** (**NCPCR**) is a statutory body established by an Act of Parliament, the Commission for Protection of Child Rights (CPCR) Act, 2005. The Commission works under Ministry of Women and Child Development. The Commission is mandated to ensure that all Laws, Policies, Programmes, and Administrative Mechanisms are in consonance with the Child Rights perspective as enshrined in the Constitution of India and the UN Convention on the Rights of the Child. As defined by the commission, child includes person up to the age of 18 years.

Post Office Act, 2023

Polity & Governance

Why in news?
- The Post Office Act, 2023 came into force on June 18. It received the assent of the President on 24 Dec 2023.

Need for such an act
- The Indian Post Office Act, 1898 was enacted 125 years ago with a view to govern the functioning of post offices in India. This Act primarily addresses mail services provided through the post office.
- Over the years, services available through the post offices have diversified beyond mails. The post office network has become a vehicle for delivery of a variety of citizen centric services.
- Post offices are practically functioning like banking services and there are 26 crore accounts with Rs 17 lakh crore deposited in post office savings services.
- About 3 crore accounts have been opened under the Sukanya Samriddhi Yojana with Rs 1.41 lakh crore deposited in them.
- As many as 3.5 crore people are beneficiaries of the direct benefits transfer scheme courtesy of the post office network.
- As many as 1.6 lakh post offices have been connected with core banking and digital banking facilities and 434 post offices have processed more than 1.25 crore passport applications and 13,500 Post Office Aadhaar Seva Kendras have been opened.

- The new Act addresses these changes and provides for a simple legislative framework to facilitate evolution of the post office into a network for delivery of citizen centric services.
- The Act aims to create a simple legislative framework for delivery of citizen centric services, banking services and benefits of government schemes.
- No penal provisions have been prescribed in the Act.

Key provisions of the Act:
i)   The post office shall provide such services as the central government may by rules prescribe.
ii) The Director General of Postal Services shall make regulations in respect of activities necessary to provide those services and fix the charges for such services.
iii) The post office shall have the exclusive privilege of issuing postage stamps.
iv) The central government shall have power to give effect to the arrangements made with any foreign country or territory.
v)   Every person shall be liable to pay charges for availing any service provided by the post office, and if such person refuses or neglects to pay any charge due to him it shall be recoverable as land revenue.
vi) The central government may prescribe the conditions for denoting the official mark on postal item to be used as prima facie evidence of the fact so denoted.
vii) The central government may, by notification, empower any officer to intercept, open or detain any item in the interest of the security of the State, friendly relations with foreign states, public order, emergency, or public safety or upon the occurrence of any contravention of any of the provisions of any law for the time being in force.
viii) The post office and officers of the post office shall be exempted from any liability by reason of any loss, mis-delivery, delay, or damage in course of any service provided by the post office except such liability as may be prescribed.

UN's Sustainable Development Report   Polity & Governance

Why in news?
- The **UN's Sustainable Development Report** indicates that **no SDGs are on track to be met by 2030**, with most showing limited or reversed progress.
- Major contributing factors include **funding shortfalls, geopolitical tensions** and **the impacts of the COVID-19 pandemic**.

About the report
- Global progress on the 17 **SDGs** is significantly **off track**, with **no goal on course to be met by 2030**.
- Major issues include **poverty, hunger, sustainable cities** and **biodiversity protection**.
- The COVID-19 pandemic, geopolitical tensions and chronic funding shortfalls have exacerbated the **slow progress**.
- Developing countries need better access to **international finance** and supportive credit rating systems.
- The report calls for a **revamp of the UN system** to better address these challenges.
- **Poverty and Hunger**
  - Persistent challenges in **eradicating poverty** and reducing hunger globally.
  - Poorest countries have fallen further behind in progress.
- **Biodiversity Protection**
  - **Insufficient measures** to protect biodiversity on land and in water.
  - **Reversal of progress** in protecting ecosystems.
- **Sustainable Cities**
  - Challenges in creating sustainable urban environments.
  - Issues include **inadequate infrastructure** and increasing urban populations.
- **Political and Social Goals**
  - Reversal of progress in areas such as press freedom.
  - Impact of geopolitical tensions and military conflicts.

Health Ministry reworks protocol as country's TB elimination drive plateaus.

Why in news?

- India's goal to achieve rapid decline in burden of TB morbidity and mortality, while working towards the elimination of TB in the country by 2025.

About the protocol

- ICMR is looking at reworking the protocol to reboot the TB free initiatives for eliminating deaths, disease and poverty resulting from infection. India has been engaged in TB control activities for more than 50 years, yet the disease continues to be the country's severest health crisis.

Tuberculosis (TB)

- It is also called **White death.**
- It is caused by a bacteria called **Mycobaterium Tuberculosis.**
- It generally effects the lungs but it can also have effect on other parts of the body.
- Most infections don't show symptoms; it is then called **Latent TB.**
- It spreads form one person to another by air if the person with active TB sneezes or coughs.

People with latent TB don't spread the disease.

- It can be cured with right antibiotics.
- Prevention of TB involves screening those at high risk, early detection & treatment, vaccination with BCG vaccine.

About programmes

- **National TB Elimination Programme (NTEP):** This program aims to eliminate TB by 2025. The program includes measures such as increasing budget allocation, implementing daily fixed-dose regimens under a short, direct-observation treatment course, introducing new diagnostic technologies, and engaging the private sector.
- **Pradhan Mantri TB Mukt Bharat Abhiyan:** This initiative is a comprehensive program to accelerate the country's progress towards TB elimination. It includes components such as the Ni-kshay Mitra Initiative, which provides additional diagnostic, nutritional, and vocational support to TB patients, and the Ni-kshay Digital Portal, which provides a platform for community support.
- **TB-Mukt Panchayat Initiative:** This initiative aims to get the support of more than 2.5 lakh Gram Panchayats to monitor and improve the uptake of services.
- **Ayushman Bharat Digital Health Mission:** This mission focuses on utilising technology and creating digital health IDs for TB patients to ensure proper diagnostics and treatment are available.
- **Ni-kshay Poshan Yojana:** This program provides financial support of Rs 500 per month to TB patients through direct benefit transfer.
- **Vaccine Development:** India is actively involved in the development of two vaccines, VPM 1002 and MIP, which are currently under Phase-3 clinical trials.
- **TB Harega Desh Jeetega Campaign:** This campaign aims to raise awareness about TB and promote community involvement in the fight to eliminate the disease.
- **Global Efforts:** India is part of global initiatives such as the WHO's **"Find. Treat. All. #EndTB"** program.

National Health Claim Exchange

Why in news?

- Ministry of Health along with IRDAI are working on measures which aims to allow patients to **access quality healthcare at reduced out-of-pocket expenditure**.

About the exchange

- The Health Ministry and IRDAI are launching the **National Health Claim Exchange (NHCX)**, which is a digital platform to **bring together insurance companies, healthcare sector providers and government insurance scheme administrators.**
- The NHCX will act as a **gateway for exchanging claims-related information among various stakeholders** in the healthcare and health insurance ecosystem.

- The integration with NHCX is expected to enable seamless interoperability of health claims processing, enhancing efficiency and transparency in the insurance industry, benefiting policyholders and patients.
- The NHCX will act as a **centralised hub for all health claims**. It will alleviate the administrative burden on hospitals which currently contend with multiple portals for various insurers.
- The IRDAI said that **all cashless claims have to be processed within 3 hours** of the receipt of discharge authorisation from the hospital.
- The National Health Authority had announced financial incentives under **Digital Health Incentive Scheme (DHIS)** from Jan 2023, to encourage adoption of digital health transactions and digitisation of patient health records in the country. Under DHIS, there is a provision that **for every insurance claim transaction through NHCX, financial incentives of ₹500 per claim or 10% of the claim amount, whichever is lower**, would be given to hospitals.
- The NHCX will help in **standardisation and interoperability of health claims** and will bring in seamless exchange of data b/w payer and provider.
- The NHCX, through **uniform presentation of data and centralised validation of claims data**, could bring in more standardised approach to healthcare pricing.

Urban Affairs Ministry to revamp affordable housing scheme — Welfare and Schemes

Why in news?
- The Ministry of Housing and Urban Affairs said that the **Pradhan Mantri Awas Yojana (Urban)**, which is a scheme to **enable affordable housing for the urban poor**, would be revamped with new features based on learning from the past nine years since when it has been operational.

About the scheme
- The PMAY (Urban), launched in **2015**, has been given an extension till December 2024.
- The mission aims to **address urban housing shortage** among the poor and middle-income groups, including slum dwellers, by ensuring a **pucca house to all eligible urban households**.
- The revamp would focus on ensuring that there are no delays on reaching out to beneficiaries who have signed up for the scheme.
- **PMAY-U** – The PMAY-U was launched by PM Modi in **2015** to tackle homelessness. The PMAY-U promised houses for **1.18 crore families** by December 2022. As of march 2024, it has only achieved about **67% of its target**, i.e. about 80 lakh. The duration of the PMAY-U was initially 7 years, from **FY 2015-16 to FY 2021-22**. It has now been extended up to **31st December 2024.** About **83%** of the houses under PMAY-U are not meant for urban landless poor, but rather for families having access to capital and land. The slum rehabilitation scheme within the PMAY-U has sanctioned only 2.96 lakh homes.

Global Gender Gap Report — Welfare and Schemes

Why in news?
- The **Global Gender Gap Report** is an **annual publication** by the **World Economic Forum (WEF)**. It **measures gender equality** across various countries, providing a comprehensive assessment of the gap between men and women in four key areas.

About the report
- **Economic Participation and Opportunity:** This **subindex** evaluates **differences** in **labor force participation**, **wages**, and **advancement opportunities** between genders.
- **Educational Attainment:** This **subindex** assesses the **gender gap** in **access to education**, including **literacy rates** and **enrollment rates** across **primary, secondary, and tertiary levels**.
- **Health and Survival:** This **subindex** measures **differences** in **life expectancy** and **sex ratio at birth**.
- **Political Empowerment:** This **subindex** examines the **disparity** between men and women in **political representation** and **decision-making roles**, such as the presence of women in **parliament** and in **ministerial positions**.
- **Scoring System:** The report **scores countries** on a **scale from 0 to 1**, where **1 indicates perfect equality**.

Objectives

- **Compass for Progress**: To serve as a compass to **track progress** on **relative gaps** between women and men in **health, education, economy**, and **politics**.
- **Setting Priorities**: Through this annual yardstick, the **stakeholders within each country** are able to **set priorities** relevant to each specific **economic, political**, and **cultural context**.

Key Findings about India

- **Global Ranking: India** has slipped two places in the **global rankings** to **129th in 2024** from **127th in 2023** out of **146 countries**.
- **South Asia Ranking:** Within **South Asia**, India ranked **fifth** after **Bangladesh, Nepal, Sri Lanka**, and **Bhutan**. **Pakistan** ranked last in the region.
- **Economic Parity:** India is among the countries with the **lowest levels of economic parity**, similar to **Bangladesh, Sudan, Iran, Pakistan**, and **Morocco**, with less than **30% gender parity** in estimated **earned income**.
- **Educational Attainment:** India showed the **best gender parity** in **secondary education enrolment**.

Political Empowerment:

- India ranked **65th globally** in the **political empowerment** of women and **10th** in **parity of years with female/male heads of state** over the past **50 years**.
- However, women's representation at the federal level, in **Ministerial positions (6.9%)**, and in **Parliament (17.2%)** remains low.
- **Gender Gap Closure:** India has closed **64.1%** of its **gender gap** as of **2024**. The slip in ranking from **127th to 129th** was primarily due to small declines in **'Educational Attainment'** and **'Political Empowerment'** parameters, although **'Economic Participation'** and **'Opportunity'** scores saw slight improvements.

Why in news?

- As highlighted by NSO India's real Gross Domestic Product (GDP) for FY24 is estimated to have grown by a faster-than-projected 8.2%, quickening from FY23's 7% pace.

About the growth surge

- The real GDP for FY24 is estimated to have grown by a faster-than-projected 8.2%, increasing from FY23's 7% pace.
- The Nominal GDP has witnessed a growth rate of 9.6% in FY24 over the growth rate of 14.2% in FY23.
- Real gross domestic product (GDP) is an **inflation-adjusted measure** that reflects the value of all goods and services produced by an economy in a given year. Real GDP is expressed in **base-year prices**. Put simply, real GDP measures the **total economic output of a country and is adjusted for changes in price**. Real GDP is calculated by **dividing nominal GDP by a GDP deflator**.

What is Nominal GDP?

- Nominal Gross Domestic Product or nominal GDP is the Value of GDP calculated as per the current market prices. So, nominal meaning it will contain all the changes in market prices owing to inflation and depletion for the current year. So, it represents the current market value of goods and commodities produced in a specific time.

What is Real GDP?

- Unlike the nominal GDP of India, real GDP is an inflation-adjusted calculation of GDP. It is the estimate of the total value of all goods and commodities produced in a year which are accounted for by inflation.
- To calculate this, one needs to consider the prices of a selected base year. One needs to first calculate the change in GDP because of inflation and divide out the inflation for every year. Therefore, it is concluded that even if the change in prices doesn't lead to a change in output, then the nominal GDP would show change.
- The total value of all the final goods and services that are produced by an economy during a given year that accounts for inflation is known as real GDP. It is calculated using the prices of a selected base year. Real GDP, accounts for the fact that if prices change but the output doesn't, nominal GDP would change.

Nominal GDP vs Real GDP

- Nominal GDP is also known as unadjusted GDP and is the measure of the value of all end-products manufactured in a nation in a specific period. Here, the market value changes depending upon the change in the quantity of production and the change in the respective prices of those goods and commodities.
- The value of all the final goods and services produced by an economy during a given year is known as nominal GDP is calculated by the current year's prices in which the output has been produced. The market value of goods and services produced in an economy and unadjusted for inflation is a Nominal GDP.
- Real Gross Domestic Product or real GDP explains the change in price because of inflation. Therefore, it can be concluded that the inflation-adjusted nominal GDP and real GDP are the same. Therefore, in a given financial year, if the price of production changes with the change in period, while the output remains unchanged, then the value of real GDP will remain the same.
- In an ideal scenario wherein there won't be any inflation/ deflation in a given period, the value of nominal GDP and real GDP will remain the same. Besides, it is easier to analyze or measure the real GDP than that of nominal GDP.
- Further, this price inflation observed in an economy can be determined by a term known as GDP deflator. Here's how it can be calculated.

  GDP deflator = (Nominal GDP/Real GDP)*100

- It acts as a price index for customers and measures inflation or deflation in price in a given year. The study of such economic concepts is crucial for students as they give them in-depth ideas about the economical concepts relating to growth and development in the country. To learn more about the concepts, students can browse through Vedantu's website and check the vast quantities of study materials present.
  - Unregistered or nominal GDP refers to the market value of all final goods that are produced in a geographical region.
  - If the output does not change but price changes from one period to the next then the nominal GDP would change, irrespective of the change in output.

- Real GDP accounts for changes in prices due to inflation.
- Real GDP is actually nominal GDP that is just adjusted for inflation.
- Real GDP would remain the same if prices change from one period to the next irrespective of the change in output.
- Change in real production is reflected by real GDP and nominal GDP will remain the same as real GDP if there is no inflation or deflation.

- **Equation**
  - GDP is calculated by the formula:

    GDP= C+G+I+NX

    where

    C=consumption;

    G=government spending;

    I=investment; and

    NX=net exports

Fiscal Deficit in FY24 narrowed to 5.6% on better tax mop-up — Economy

Why in news?
- The central government's fiscal deficit during 2023-24 decreased to 5.6% of GDP. This is due to **higher revenue realization and lower expenditure**. **Net tax collection was ₹23.26 lakh crore in FY24. The expenditure stood at ₹44.42 lakh crore.**

About Fiscal Deficit
- The difference between **total revenue and total expenditure of the government** is termed as fiscal deficit. It is an indication of the **total borrowings needed by the government.**
- The gross fiscal deficit (GFD) is the **excess of total expenditure** including loans net of recovery over revenue receipts (including external grants) and non-debt capital receipts. The net fiscal deficit is the **gross fiscal deficit less net lending of the Central government.**
- Generally fiscal deficit takes place either due to **revenue deficit or a major hike in capital expenditure.** Capital expenditure is incurred to **create long-term assets** such as factories, buildings and other development.
- A deficit is usually financed through **borrowing from either the central bank of the country or raising money from capital markets** by issuing different instruments like treasury bills and bonds.

GST collections slide to Rs.1.73 crore — Economy

Why in news?
- India's Goods and Services Tax (GST) collections for May 2024 came in at Rs 1.73 lakh crore, up 10% year-on-year. This represents a 10% year-on-year growth, driven by a strong increase in domestic transactions (up 15.3%) and slowing of imports (down 4.3%)

About GST collections
- **Breakdown of May 2024 Collections:**
  - Central Goods and Services Tax (CGST): ₹32,409 crore;
  - State Goods and Services Tax (SGST): ₹40,265 crore;
  - Integrated Goods and Services Tax (IGST): ₹87,781 crore, including ₹39,879 crore collected on imported goods;
  - Cess: ₹12,284 crore, including ₹1,076 crore collected on imported goods.
- The gross GST collections in the FY 2024-25 till May 2024 stood at ₹3.83 lakh crore. This represents an impressive 11.3% year-on-year growth, driven by a strong increase in domestic transactions (up 14.2%) and marginal increase in imports (up 1.4%). After accounting for refunds, the net GST revenue in the FY 2024-25 till May 2024 stands at ₹3.36 lakh crore, reflecting a growth of 11.6% compared to the same period last year. Breakdown of collections in the FY 2024-25 till May, 2024, are as below:

- Central Goods and Services Tax (CGST): ₹76,255 crore;
- State Goods and Services Tax (SGST): ₹93,804 crore;
- Integrated Goods and Services Tax (IGST): ₹1,87,404 crore, including ₹77,706 crore collected on imported goods;
- Cess: ₹25,544 crore, including ₹2,084 crore collected on imported goods.

Total GST Collection (in Rs. Crores)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2023-24	1,87,035	1,57,090	1,61,497	1,65,105	1,59,069	1,62,712	1,72,003	1,67,929	1,64,882	1,74,106	1,68,337	1,78,484
2024-25	2,10,267	1,72,739										
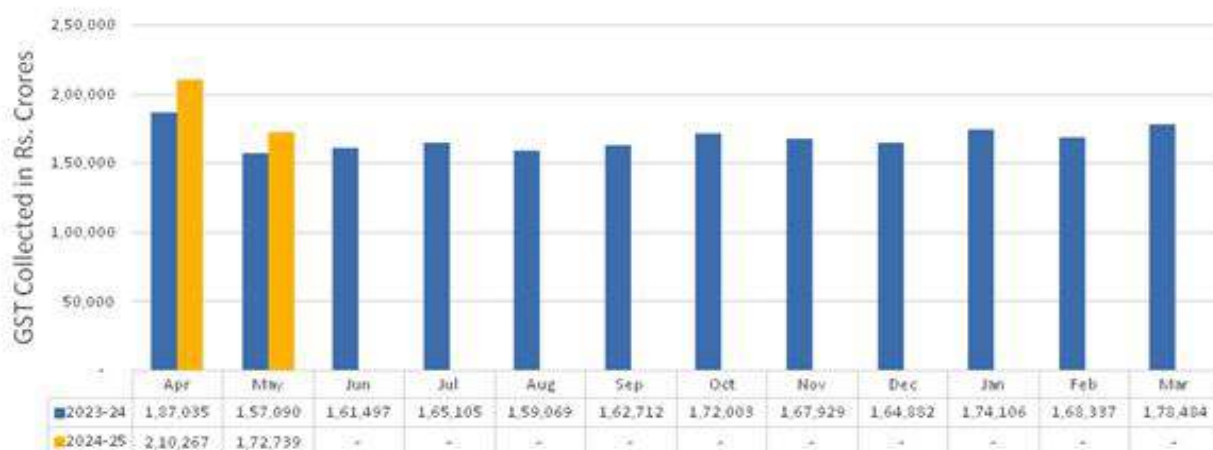
About GST
- GST is a **single indirect tax** which has replaced multiple indirect taxes in India such as the excise duty, VAT, services tax, etc.
- It came into effect in **2017**. GST is levied on the supply of goods and services in India.
- It aims to remove the ambiguity and bring equality in the prices of products across the country.
- The GST rates are notified on the recommendation of the **GST Council**.
- The GST council has fitted over 1300 goods and 500 services under four tax slabs of **5%, 12%, 18% and 28% under GST**.
- It came into effect by **101st Amendment to the constitution of India**, which was done via introducing 122nd Constitutional Amendment Bill.

GST Council
- The GST Council is a **joint forum of the Centre and the states**. It was set up by the President as per **Article 279A (1)** of the amended Constitution.
- The members of the Council include the **Union Finance Minister (chairperson),** the Union Minister of State (Finance) from the Centre. Each state can nominate a minister in-charge of finance or taxation or any other minister as a member.
- The Council, according to Article 279, is meant to **"make recommendations to the Union and the states on important issues related to GST, like the goods and services that may be subjected or exempted from GST, model GST Laws".** It also decides on various rate slabs of GST.

Inequality and Economic Growth

Economy

Why in news?
- Researchers from the Paris School of Economics have shown that the inequality in modern India is greater than the colonial times.

Monopoly of Billionaires
- The billionaires draw their wealth from monopoly. Their business groups are dominant players within their specific market. This allows them to set prices instead of being determined by the market.
- They **mark up the prices above the cost of production** according to their monopoly power.
- The presence of monopolies can lead to **lower real wages** and lower levels of output and investment.

- The phenomenon of **Greedflation** or companies raising prices to increase the profit margins in the wake of multiple demand and supply shock due to pandemic, is the reason behind high rates of inflation in the west.

Inequality and Growth

- **When companies exercise market power, mark-ups and prices will be higher**. Real wages of workers will be lower and they can only purchase less items. However, the companies because of higher margins, will enjoy the same amount of profits from the sale of a lesser amount of goods.
- The increase in income from a given amount of investment will be lesser under monopoly because of reduced consumption power. Thus, investment will have weaker effect on growth while not affecting profits.
- Although the absolute amount of consumption of the rich is more but they consume a smaller proportion of their incomes. And the multiplier effect depends on the process of consumption from incomes. Therefore, an unequal economy will put less incomes in the hands of those who have greater tendency to consume, leading to weaker expansion in the economy.
- In the multiplier effect, the investment raises incomes by a greater proportion than the initial investment.

Six PSU banks issued look-out circulars against defaulters in last 5 years. > Economy

Why in news?

- Six public sector banks (PSUs) have issued 1,071 look-out circulars (LOCs) since 2018 to prevent them from fleeing to other countries.

About the issue

- The SBI, the largest commercial bank in the country, issued 583 LOCs.
- After SBI, Union Bank of India, Punjab National Bank (PNB) and Indian Overseas Bank (IOB) issued 260, 131, and 42 LOCs, respectively.
- According to RBI, a 'wilful default' would be deemed to have occurred if the borrower has defaulted in meeting their repayment obligations to the lender even when they have the capacity to honour the obligations.
- A wilful default happens when the **borrower has not utilised the finance from the lender for the specific purpose for which finance was availed,** and has diverted the funds for other purposes, or siphoned off funds, or disposed of or removed the movable fixed assets or immovable property given for the purpose of securing a term loan without the knowledge of the bank.

PMI signals services growth receded to a 5-month low in May > Economy

Why in news?

- Activity in India's services sectors slumped to a 5-month low in May, with competition, price pressures and a severe heat wave denting growth in new orders and output.

About PMI

- The Purchasing Managers' Index (PMI) is an indicator of the **prevailing direction of economic trends in the manufacturing and service sectors**. The indicator is **compiled and released monthly** by the **Institute for Supply Management (ISM),** a non-profit supply management organization. It is a diffusion index that summarizes **whether market conditions are expanding, staying the same, or contracting**, as viewed by purchasing managers. The purpose of the PMI is to provide information about current and future business conditions to company decision-makers, analysts, and investors.
- The PMI is derived from a series of qualitative questions. For manufacturing PMI, the questionnaire is sent to manufacturing companies.
- The questions are related to 5 key variables.
  - The variables with their weights in the index are:
  - new orders (30%),
  - output (25%),
  - employment (20%),
  - suppliers' delivery times (15%) and
  - stock of items purchased (10%).
- The surveys are conducted on a monthly basis.

RBI keeps repo rate unchanged, raises GDP forecast to 7.2%

Why in news?
- The monetary policy committee (MPC) of RBI decided to keep the repo rate unchanged at 6.5%.

About the rates
- This is the 8th time in a row that the policy rate has been put on hold to keep the focus on battling high inflation.
- The MPC of RBI has revised its GDP forecast upwards from the earlier 7% to 7.2% for the FY 2024- 25
- It has also decided to remain focused on withdrawal of accommodation to ensure that inflation does not accelerate, while supporting growth.
- These decisions are in line with the objective of achieving the medium term target for CPI inflation of 4% within a band of +/- 2%, while supporting growth.

Repo rate
- Repo rate is the rate at which the Reserve Bank of India (RBI) lends to other banks.
- It is a part of the **Liquidity Adjustment Facility (LAF)** of the RBI.
- The Repo rate borrowing is generally available at the overnight repo, 7 days, 14-day repo.
- The commercial banks make a repurchase agreement with the RBI and sell the G-secs and buy back at a different rate on the agreed price.
- The **increased repo rate** will discourage banks to borrow from the RBI and lending to the customers. This in turn will reduce the liquidity and demand in the market. It is part of the **contractionary monetary policy.**
- On the other hand, **decreased repo rate** will encourage banks to borrow and lend to customers increasing the liquidity and demand in the market. This is a part of the **Expansionary Monetary Policy.**

Digital Payments Intelligence Platform soon to curb Fraud

Why in news?
- The RBI has proposed to set up a Digital Payments Intelligence Platform to **mitigate payment frauds and protect customers from associated risks.**

About the committee
- RBI has constituted a committee to examine aspects of the digital public infrastructure for the intelligence platform.
- The proposal to create a digital payments intelligence platform comes **as the number of payment frauds have shot up**. The number of frauds in the banking sector increased over four times in the past five years to 36,075.
- The RBI has proposed to include payments like replenishment of balances in Fastag, National Common Mobility Card (NCMC) under the e-mandate framework.
- This will enable customers to automatically replenish the balances in Fastag, NCMC etc. if the balance goes below the threshold limit set by them.
- To encourage wider adoption of UPI Lite and enabling quicker small value payments through an on-device wallet, the RBI has proposed to bring it under the e-mandate framework.

WPI inflation in May spikes to 15-month high on food prices

Why in news ?
- The inflation in India's wholesale prices accelerated to a 15-month high of 2.61% in May, with food inflation surging to 10-month peak of 7.4% driven by steeper prices for vegetables, fruits, pulses and cereals, and a resurgence of price rise in manufactured products after 14-months of deflation.

Wholesale Price Inflation (WPI)
- The Wholesale Price Index measures the change in prices of goods traded by wholesale businesses.
- Unlike the Consumer Price Index (CPI), which tracks prices of goods and services purchased by consumers, WPI tracks factory gate prices.
- Under the index, commodities are categorised into three groups — primary articles (which are further divided into food and non-food articles), fuel & power and manufactured products.
- The base year for the index is **2011-12.**

NSSO survey finds COVID-19's second wave hit informal economy hard — Economy

Why in news?
- The large informal non-agricultural sector in India was badly hit by the 2nd wave of COVID-19 pandemic, but has gradually recovered since then. The number of unincorporated firms and their employees rose by 6% and 8% respectively in the latter half of 2022-23.

About the survey
- The Annual Survey of Unincorporated Sector Enterprises (ASUSE) was conducted by NSSO in 2021-22 & 2022-23.
- The unincorporated manufacturing, trade and other service activities were hit by the second wave of pandemic badly. However, the situation improved gradually from July 2021.
- Between Oct. 2022 & March 2023, the number of estimated informal firms had risen to 6.5 crore with 11 crore employees.
- The maximum growth in employment during this period was observed in other services (13.42%), followed by manufacturing (6.34%).
- The survey data is used to compile national account statistics as the country's unincorporated non-farm sector plays a key role in generating jobs, creating economic value and overall socio- economic landscape.

Launch of Rs. 2800 crore Digital Agri Mission — Economy

Why in news?
- The Digital Agriculture Mission will pave the way for **creation of a nationwide farmers registry, crop sown registry, and geo-referencing of village maps**.

About mission
- A budgetary allocation of **Rs. 28,00 crore** has been made for the mission and it will be rolled out over the next two years (till 2025-26).
- The launch of the mission was initially planned in 2021-22 but due to Covid-19 outbreak, it could not be rolled out nationally.
- One of the components of the mission is to **create a farmers' registry**, in which every farmer will be given a **unique ID.**
- A pilot project has been undertaken across **6 districts** — Farrukhabad in Uttar Pradesh, Beed in Maharashtra, Gandhinagar in Gujarat, Fatehgarh Sahib in Punjab & Virudhnagar in Tamil Nadu.
- The unique farmer ID will allow **launch of new value-added services** and farmers will be able **to avail various government schemes** including PM-Kisan and Fasal Bima Yojana through this ID. It will also enable them to avail financial services like farm loans and insurance.
- The mission also envisages a **crop sown registry**. This will have a **record of crops sown by a farmer on his land**. It will help better planning and estimation of crop production.

SWM Cess — Economy

Why in news?
- The Bruhat Bengaluru Mahangara Palike (BBMP) has proposed a Solid Waste Management (SWM) Cess of ₹100 **per month for each household**.

About the cess
- Urban Local Bodies (ULBs) levy user fees or SWM cess **according to the provisions of Solid Waste Management Rules 2016**. According to these guidelines, the ULBs must collect user fees/cess for SWM services provisions provided. The ULBs typically charge about ₹30-50 per month as SWM cess, which is collected along with property tax. The ULBs are now considering revising these rates and imposing higher charges on bulk waste generators to meet a portion of the costs incurred in providing SWM services.
- The ULBs typically deploy about 80% of their manpower and up to 50% of their annual budgets to provide SWM services to city residents.
- SWM services consist of 4 components – **Collection, Transportation, Processing & Disposal.**

Challenges

- Solid waste generated in Indian cities consist of 55-60% wet biodegradable material and 40-45% non-biodegradable material. The portion of recyclable material in the dry waste is minimal, only 1-2%, while the rest is mostly non-recyclable and non-biodegradable waste.
- Although 55% of wet waste can be converted into organic compost or biogas, the yield is as low as 10-12%, making both composting and biogas generation from solid waste financially unviable.
- The ULBs face other challenges associated with SWM services like extra work of clearing open points and drains, preventing open littering, change in waste generation & sweeping operations.
- The disposal of non-compostable and non-recyclable dry waste, like single use plastic, textile waste and inert materials, is expensive since it needs to be shipped to cement factories or waste to energy projects located about 400-500 Km from cities.

SAARC Currency Swap Plan | Economy

Why in news?

- The RBI has decided to put in place a **revised Framework on Currency Swap Arrangement for SAARC countries** for the period **2024 to 2027.**

About the plan

- Under this Framework, the Reserve Bank would enter into bilateral swap agreements with SAARC central banks, who want to avail of the swap facility.
- Under the Framework for 2024-27, **a separate INR Swap Window has been introduced with various concessions for swap support in Indian Rupee**. The total corpus of the Rupee support is ₹250 billion.
- The RBI will continue to offer swap arrangement in US$ and Euro under a separate US Dollar/ Euro Swap Window with an overall corpus of US$ 2 billion.
- The SAARC Currency Swap Facility came into operation in 2012 with an objective to provide a backstop line of funding for short term foreign exchange liquidity requirements or balance of payment crises of the SAARC countries till longer term arrangements are made.
- In a currency swap, **two parties exchange principal and interest payments on a loan denominated in one currency for equivalent amounts in another currency**. Typically, one party borrows in its domestic currency and lends in the foreign currency, while the other party does the opposite. The exchange rates and terms are agreed upon at the beginning of the contract.

SEBI tightens norms on Financial Influencers, eases rules for Delisting | Economy

Why in news?

- SEBI asked brokers and mutual funds to stop using the services of unregulated financial influencers for marketing and advertising campaigns.

About the regulations

- The decision was taken to **address concerns that related to certain persons**, including unregulated entities, including investors to deal in securities based on inappropriate claims.
- However, it said that, financial influencers engaged in investor education will be exempt from the new restrictions.
- India had **154 million trading accounts** as of April 2024, which a **4 times increase** from 36 million trading accounts in April 2019.
- SEBI also introduced **new criteria to decide on stocks** that can be linked to derivative products, like futures and options.
- SEBI board also approved **changes in delisting rules** that would make it easier for companies to exit from stock exchanges.
- Companies can now **offer shareholders fixed prices for shares** as an alternative mechanism to delist from stock exchanges. Currently, delisting is carried out via reverse book building.

Economy Robust despite Global Risks

Why in news?

- The RBI said in its **29th Financial Stability Report (FSR)** said that, the Indian economy and the financial system remain robust and resilient.

About the global risks

- The capital to risk-weighted assets ratio (CRAR) and the common equity tier 1 (CET1) ratio of scheduled commercial banks (SCBs) stood at 16.8% and 13.9%, respectively, at end-March 2024.
- SCBs' gross non-performing assets (GNPA) ratio fell to a multi-year low of 2.8 per cent and the net non-performing assets (NNPA) ratio to 0.6 per cent at end-March 2024.
- Macro stress tests for credit risk reveal that SCBs would be able to comply with minimum capital requirements.
- Non-banking financial companies (NBFCs) remain healthy, with CRAR at 26.6 per cent, GNPA ratio at 4.0% and return on assets (RoA) at 3.3%, respectively, at end-March 2024.
- The global economy is facing heightened risks from prolonged geopolitical tensions, elevated public debt, and the slow progress in the last mile of disinflation.
- Despite these challenges, the global financial system has remained resilient, and financial conditions stable.

World Investment Report 2024

Why in news?

- The World Investment Report 2024 indicates **that the value of international project finance deals in African nations plummeted by 50 per cent to $64 billion in 2023, following a 20 per cent decrease in 2022.**

About the report

- **Key highlights of the report**
  - Global foreign direct investment (FDI) in 2023 decreased marginally, by 2 percent.
  - FDI flows to developing countries fell by 7 percent to $867 billion, mainly due to an 8 per cent decrease in developing Asia.
  - China, the second largest FDI recipient in the world, saw a rare decline in inflows.
  - Industry trends showed lower investment in the infrastructure and digital economy sectors, but strong growth in the global value chain-intensive sectors of manufacturing and critical minerals.
  - International investment in sectors relevant for the Sustainable Development Goals in developing countries declined in 2023.
- **Key facts about the UN Conference on Trade and Development**
  - It is the UN's leading institution dealing with trade and development.
  - It is a permanent intergovernmental body established by the United Nations General Assembly in 1964.
  - Its objective is to assist developing countries, especially the least developed countries, and countries with economies in transition, to integrate beneficially into the global economy.
  - Headquarters: Geneva, Switzerland.
  - UNCTAD membership consists of 195 states.

Why in news?
- Far right parties gained in the recently concluded election

European Parliament and elections
- The European Parliament is an important forum for political debate and decision-making at the EU level. The Members of the European Parliament are **directly elected by voters** in all Member States to represent people's interests with regard to EU law-making and to make sure other EU institutions are working democratically. The European Parliament is made up of **705 Members** elected in the **27 Member States of the European Union**.

President of EP
- The **President** is **elected** for a **renewable term of two and a half years,** i.e. **half the lifetime of a Parliament**.
- The **President** represents the **European Parliament** vis-à-vis the outside world and in its relations with the other EU institutions.

MEPs (Members of European Parliament)
- oversee the work of the Commission and other EU institutions
- scrutinise the implementation of EU policies
- decide on the annual budget together with the Council, and monitor the use of EU funds
- vote to elect the president of the Commission, and approve the whole line-up of commissioners.
- have the right to dismiss the Commission.

Composition, Term and Leadership:
- The EP comprises 720 members of the European Parliament (MEPs) who are elected by EU citizens every five years.
- MEPs then elect their president for a term of two and a half years.

Candidacy
- All candidates must be EU citizens.
- Voters may choose from individual candidates or delegates from political parties.
- Once elected, politicians from each nation join the European groups based on their political orientations.
- **Restrictions for elected individuals:** Elected MEPs cannot hold functions in national governments or other political bodies such as the EU Commission, the Court of Justice, or the Court of Auditors.

Voting from abroad:
- EU citizens can vote either in their country of origin or from abroad.
- Voting from abroad is permitted in most member states except Czechia, Ireland, Malta, and Slovakia.
- In Bulgaria and Italy, this right applies only to those living within the EU.

Voting process:
- Some member states use closed lists, while others allow voters to select individual candidates in a preferential system.
- Electors abroad can vote at their national embassies, via mail, or electronically.

Elections to European Parliament:
- Elections to the European Parliament take place **every five years** by **universal adult suffrage;** with more than 400 million people eligible to vote, they are the **second largest democratic elections in the world** after **India's**.

PM Swearing In

Why in news?

- India announced that the leaders of 7 countries from its neighbourhood and the Indian Ocean region, including the President of Maldives and PM of Bangladesh. The visit of the leaders to attend the swearing-in ceremony of PM Modi for its 3rd consecutive term in keeping with the highest priority accorded by India to is Neighbourhood First Policy and SAGAR vision.

Neighbourhood First Policy

- India's '**Neighbourhood First Policy**' guides its approach towards the management of relations with countries in its immediate neighbourhood, that is, Afghanistan, Bangladesh, Bhutan, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka.
- The Neighbourhood First policy, inter alia, is aimed at:
  - Enhancing physical, digital and people-to-people connectivity across the region Augmenting trade and commerce
  - This policy has evolved into an institutional priority for all the relevant arms of the Government managing relations and policies with our neighbourhood.
- India's Neighbourhood First Policy is a strategic initiative aimed at fostering better relations with its immediate neighbours. Introduced by Prime Minister Narendra Modi, the policy emphasizes the importance of regional cooperation and stability for India's national interests and global standing. Here's a detailed explanation:

Objectives

- **Strengthening Bilateral Ties**: Enhance political, economic, and cultural relations with neighbouring countries.
- **Regional Stability**: Promote peace and stability in the region, which is crucial for India's security and economic growth.
- **Economic Integration**: Boost trade and investment with neighbouring countries to create a more integrated regional economy.
- **People-to-People Connectivity**: Improve cultural and social ties through initiatives like visa liberalization, educational exchanges, and tourism.

India welcomes Egypt, Iran, UAE, Saudi Arabia & Ethopia joining BRICS

Why in news?

- The key meeting of the representatives of BRICS grouping was hosted by Russia. It was held in Nizhny Novgorod in Western Russia.

About BRICS nations

- The BRICS nations or Brazil, Russia, India, China and South Africa form the five key pillars of south-south cooperation and are the representative voice of emerging markets and developing countries in the global forums such as the G20.
- The acronym BRIC was first used in 2001 by Goldman Sachs in their Global Economics Paper, 'The World Needs Better Economic BRICs' on the basis of econometric analyses projecting that the four economies would individually and collectively occupy far greater economic space and would be amongst the world's largest economies in the next 50 years or so.
- The leaders of BRIC (Brazil, Russia, India, and China) countries met for the first time in St. Petersburg, Russia, on the margins of the G8 Outreach Summit in July 2006. Shortly afterwards, in September 2006, the group was formalised as BRIC during the First BRIC Foreign Ministers' Meeting, which met on the sidelines of the General Debate of the UN Assembly in New York City.
- After a series of high level meetings, the first BRIC summit was held in Yekaterinburg, Russia on June 16, 2009.
- It was agreed to expand BRIC into BRICS with the inclusion of South Africa at the BRIC Foreign Ministers meeting in New York in September 2010. Accordingly, South Africa attended the third BRICS Summit in Sanya on April 14, 2011.
- In 2014, the BRICS nations established the New Development Bank (NDB). It has an initial authorised capital of $100 billion and initial subscribed capital of $50 billion of which $10 billion is paid-in capital.

Expansion of BRICS

- BRICS leaders have left the door open to future enlargement as dozens more countries voiced interest in joining a grouping.
- Around 40 countries had shown interest in joining BRICS out of which 23 formally applied for the membership.
- In August 2023, the top BRICS leaders at the grouping's summit in Johannesburg approved a proposal to admit six countries, including Argentina, into the bloc with effect from January 1. However, Argentina's new President Javier Milei announced withdrawing his country from becoming a member of the BRICS.
- The decision to expand the bloc is seen as an effort to reshape global governance while putting the voices of the Global South as a key priority area to advance the overall development agenda.
- The Russian President said BRICS is attracting an ever increasing number of supporters and like-minded countries that share its underlying principles such as sovereign equality, openness, consensus, aspiration to form a multipolar international order and a fair global financial and trading system.

G-7 commits to promote IMEC   International Relations

Why in news?

- The Group of Seven industrialized nations have committed to promote concrete infrastructure initiative such as **India-Middle East –Europe Economic Corridor (IMEC)** in G-7 Summit Communique.

About the initiative

- The G-7 countries also reiterated a commitment to a '**free and open Indo-Pacific**' based on the rule of law.
- The G-7 countries agreed to promote concrete G7 **PGII (Partnership for Global Infrastructure and Investment) initiatives**, flagship projects and complementary initiatives to develop transformative economic corridors for quality infrastructure and investment, like deepening of coordination and financing for **Lobito Corridor, the Middle Corridor and the India-Middle East- Europe Economic Corridor, also building on the EU Global Gateway, the Green Wall Initiative and Mattei Plan for Africa launched by Italy**.
- The G7 countries agreed to **increase their efforts to enhance interoperability amongst AI governance approaches** to promote greater certainty, transparency and accountability while recognizing that approaches and policy instruments may vary across G7 members.
- With a view to support the current and future needs of Ukraine, the G7 countries will launch
- **Extraordinary Revenue Acceleration (ERA) Loans** for Ukraine, in order to make available approx.
- $50 billion in additional funding to Ukraine by the end of the year.
- The IMEC envisages a vast **road, railroad and shipping network** among **Saudi Arabia, India, UAE & Europe** to ensure integration among **South Asia, West Asia and the West**. The IMEC is also an initiative by like-minded nations to gain strategic influence in the face of China's BRI which has faced increasing criticism over the lack of transparency and disregard for the sovereignty of nations. The IMEC was accepted during the G20 summit hosted by India in 2023. The BRI is a mega connectivity project that connects China with Southeast Asia, Central Asia, Russia & Europe.

India, US partnership on Critical Minerals   International Relations

Why in news?

- India & US will conclude a bilateral agreement on furthering cooperation on critical minerals b/w US department of commerce and Ministry of commerce and Industry and Ministry of Mines of India, to drive a partnership in supply chains for **Graphite, gallium and germanium**.

About Critical Minerals

- India released a list of **30 minerals critical for the country** and has been looking to acquire mines abroad in addition to expanding exploration within the country. To enable this, the Mines and Minerals (Development & Regulation) Act 1957 was amended by MMDR Amendment Act 2023.
- India has incorporated a joint venture company **Knanij Bidesh India Ltd**. with equity contribution from **3 Central Public Sector Enterprises (National Aluminium Company Ltd, Hindustan Copper Ltd & Mineral Exploration and Consultancy Ltd)** with the objective of acquiring critical mineral assets abroad to ensure consistent supply of critical minerals to the Indian domestic market.

- Critical minerals are mineral resources that are **essential to the economy and whose supply may be disrupted**. The 'criticality' of a mineral changes with time as supply and society's needs shift. Today, many critical minerals are metals that are central to high-tech sectors. They include the rare earth elements and other metals such as lithium, indium, tellurium, gallium, and platinum group elements.

Criteria for Identifying Critical Minerals:
- **Three-Stage Assessment:**
    - **Study of International Strategies:** Analysed critical mineral strategies from countries like Australia, USA, Canada, UK, Japan, and South Korea.
    - **Inter-Ministerial Consultation:** Engaged with various ministries (e.g., Ministry of Power, Ministry of New and Renewable Energy, Department of Atomic Energy) to identify sector-specific critical minerals.
    - **Statistical Analysis:** Conducted a detailed statistical exercise to compute factors like substitutability index, minerals cross-cutting index, and import reliance.

Critical Minerals in India:
- Government has released a **list of 30 c**ritical minerals for India.
- These minerals are **Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium**, **Germanium**, **Graphite**, Hafnium, Indium, **Lithium**, Molybdenum, Niobium, Nickel, PGE, **Phosphorous**, Potash, REE, Rhenium, **Silicon**, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, **Vanadium**, Zirconium, Selenium, and **Cadmium**.

Government measures
- **Ministry of Mines:**
    - Constituted a steering committee in 2011 to review the availability of rare-earth elements (REE) and energy-critical elements.
    - Conducted a study titled "Rare Earths and Energy Critical Minerals: A Roadmap and Strategy for India" to review production, consumption, and reserves.
- **Council on Energy, Environment and Water (CEEW):**
    - Conducted a study highlighting the lack of research in India regarding mineral resource security for the manufacturing sector.
    - Identified 13 minerals as most critical by 2030: Rhenium, Beryllium, Rare Earths (Heavy), Germanium, Graphite, Tantalum, Zirconium, Chromium, Limestone, Niobium, Rare Earths (Light), Silicon, and Strontium.
- **Geological Survey of India (GSI):**
    - Submitted a strategic plan for enhancing REE exploration in India in collaboration with the Atomic Mineral Division (AMD).
    - Emphasised securing rare earth elements for India.
- **Centre for Socio and Economic Progress (CSEP):**
    - Released a working paper in 2023 titled "Assessing the Criticality of Minerals in India".
    - Evaluated the criticality of 43 non-fuel minerals based on economic importance and supply risks.

Prime Minister's of India and Bangladesh Bilateral meeting — International Relations

Why in news?
- A bilateral meeting with PM Modi & PM Sheikh Hasina is focussed on a wide range of topics like– defence, connectivity and infrastructure, power and energy cooperation, trade and economic partnership, development cooperation, river water-sharing and cultural ties.

India-Bangladesh relation
- Bangladesh is **India's biggest trade partner in South Asia** and India is the second biggest trade partner of Bangladesh in Asia.
- India is Bangladesh's largest export destination in Asia, with approx. $2 billion of Bangladeshi exports to India in FY 2022-23.

- The two countries share **4096.7 km** of border, which is the longest land boundary that India shares with any of its neighbours.
- Cooperation in the power and energy sectors has become one of the crucial pillars of India- Bangladesh relations in recent years, and Bangladesh is currently importing 1160 MW of power from India.
- The **India-Bangladesh Friendship Pipeline** for carriage of High Speed Diesel from India into Bangladesh was inaugurated in March 2023.
- Efforts for greater connectivity to forge enduring people-centric partnership have resulted in rehabilitation of six pre-1965 rail links between India and Bangladesh.
- Both countries inaugurated the **6th cross-border rail link between Agartala station and Akhaura on the Dhaka-Chittagong railway line** on November 1, 2023.
- Bangladesh is the largest development partner of India today, and India has extended three Lines of Credits (LOC) to Bangladesh in the last 8 years, amounting to around US$ 8 billion, for development of infrastructure in various sectors including roads, railways, shipping and ports.

G7 and India   International Relations

Why in news?
- Leaders of G-7 (US, Canada, France, Japan, UK & Italy) recently met in Apulia region of Italy.
- India has been invited to the outreach session **11 times** & PM Modi attended it for the **5th time**.
- The outreach session of G-7 meeting follows a day after the main G-7 deliberations.

About the meeting
- Importance of India in the G-7 - India is not only a key member of Global South and has hosted '**Voice of Global South**' conference since 2023, it is also a member of G-20 troika along with Brazil and South Africa.
- Other countries whose leaders attended the outreach were Algeria, Argentina, brazil, Jordan, Kenya, Marutiania, Tunisia, Turkiye & UAE, along with heads of ADB, IMF, OECD, UN & World Bank.

Key takeaways of G7 Summit
1) **Abortion Left Out of the G7 Statement:** The G7 summit statement released did not mention abortion, highlighting a disagreement among leaders.
   - Italy's Prime Minister Giorgia Meloni, who hosted the summit and her allies, were divided on this issue.
   - Last year, during their summit in Japan, G7 leaders had committed to addressing access to safe and legal abortion. However, this commitment was excluded from this year's final statement in Puglia, reportedly due to Prime Minister Meloni's stance.
   - The United States and France opposed PM Meloni's efforts to dilute the language concerning women's rights, especially given her stance against abortion.
   - Instead, the statement affirmed previous commitments made in the Hiroshima leaders' communique to ensure universal access to adequate, affordable, and high-quality health services for women. This includes comprehensive sexual and reproductive health and rights for all.
2) **$50 Billion Loan Plan for Ukraine:** During their initial day of discussions in southern Italy, the G7 nations reached an initial agreement to provide Ukraine with $50 billion in loans.
   - These loans would be backed by the interest accrued from frozen Russian assets.
   - The G7 leaders hailed this agreement as a robust demonstration of Western resolve.
   - In their official summit declaration, the G7 leaders stated their commitment to imposing further sanctions on Russia in response to its invasion of Ukraine.
3) **Crackdown on Migration:** The G7 leaders discussed immigration during their meetings, a significant concern for Italian Prime Minister Giorgia Meloni, who aims to reduce illegal migration from Africa. She has initiated a major plan to enhance development in Africa to address the root causes of migration.
   - They agreed to establish a coalition to combat people smuggling, focusing on increased cooperation in investigating trafficking networks and seizing their assets.
   - UK Prime Minister Rishi Sunak highlighted that this G7 summit marked the first time migration was a central topic, describing it as a positive step forward.
4) **Vows Action Against China's Business Practices:** The G7 leaders pledged to address what they termed as harmful business practices conducted by China.

- Specifically, the G7 nations focused on China's economic influence, highlighting concerns about unfair market practices in sectors such as electric vehicles, steel, and renewable energy.
- Their summit statement clarified that the G7's objective was not to undermine China or impede its economic growth. Instead, they emphasized their commitment to taking measures to protect their own businesses from unfair practices, promote fair competition, and rectify ongoing economic harms.
- Additionally, the G7 leaders warned of potential actions against Chinese financial institutions that facilitated Russia's acquisition of weapons amid its conflict with Ukraine.

- The G7 comprises the UK, Canada, France, Germany, Italy, Japan and the United States.
- It is the group of top seven developed economies.
- The Group was established as a platform for economic and financial cooperation in response to the 1973 energy crisis.
- The first Summit of Heads of State and government was held in 1975 in Rambouillet, France. It included France, the United States of America, the United Kingdom, Germany, Japan, and Italy.
- In 1976, with the admission of Canada, the G7 took its current configuration. Since 1977, representatives of the European Economic Community, now the European Union, also participate in the work of the Group.
- The European Union is a 'non-enumerated' member and does not assume the rotating G7 presidency.
- The G7 expanded into the G8 between 1997 and 2013, with the inclusion of Russia.
- Russia was expelled from the G8 in 2014, after Moscow annexed the Crimea region from Ukraine.
- The role as host, also known as the G7 presidency, rotates annually among member countries in the following order: France, United States, United Kingdom, Germany, Japan, Italy and Canada.
- The combined gross domestic product of G7 countries is about $40 trillion — a little less than half of the global economy.
- The annual G7 summits have over the years developed into a platform for determining the course of multilateral discourse and shaping political responses to global challenges.
- It complements the role of the G20, which is widely regarded as the framework for ongoing global economic coordination.
- It is capable of setting the global agenda, because decisions taken by these major economic powers have a real impact. The political direction set by these leaders on a policy issue will have a "ripple" effect across many other international organisations and institutions.
- Thus, decisions taken at the G7 are not legally binding, but exert strong political influence.

Russia approves draft logistics agreement with India — International Relations

Why in news?
- **India-Russia mutual logistics agreement** is ready for conclusion with Russia approving the draft agreement. The agreement will **simplify military-to-military exchanges** for exercises, training, port calls and Humanitarian Assistance and Disaster Relief (HADR) efforts. It is similar to a series of such agreements that India has signed with a number of countries, beginning with US in 2016.

About the Draft logistics
- **Agreement Details**
  - This agreement aims to streamline **military-to-military exchanges** for exercises, training, port calls, and **Humanitarian Assistance and Disaster Relief (HADR)** efforts.
  - It aligns with a series of similar agreements India has signed with various countries, starting with the United States, Logistics Exchange Memorandum of Agreement (LEMOA) in 2016.
- **Delayed Agreement**
  - This agreement is also known as the **Reciprocal Exchange of Logistics Agreement (RELOS)** has faced delays for several years.
  - Once it is concluded, the agreement will be valid for **five years** and **will automatically renew** unless either party expresses a desire to terminate it.
- **Access to Arctic Facilities**
  - The RELOS, once signed, will grant India access to Russian facilities in the Arctic region.
  - The Arctic is an area of growing global interest due to new shipping routes.
  - This is significant given India's increasing investments in Russia's eastern regions.

- **Benefits associated with logistics exchange agreements:**
  - Foundational agreements with the U.S.A., and logistics agreements with Australia and Japan, have been particularly advantageous as they operate **several common military platforms.**
  - Similarly, the United Kingdom has been utilizing its agreement with India to enhance maritime cooperation.

India achieves 'outstanding outcome' in FATF evaluation — International Relations

Why in news?

- India has achieved an outstanding outcome in the **Mutual Evaluation** conducted during 2023-24 by the Financial Action Task Force (FATF).

About FATF report

- The Mutual Evaluation Report of India, was adopted in the **FATF plenary held in Singapore**. It has placed India in the **"regular follow-up" category**, a distinction shared by only four other G-20 countries.
- This marks a significant milestone in the nation's efforts to **combat money laundering (ML) and terrorist financing (TF).**
- The FATF plenary concluded that India had reached a high level of technical compliance with its requirements.
- The country's **anti-money laundering (AML), countering the financing of terrorism (CFT), and counter-proliferation financing (CPF)** regime was achieving good results, including international cooperation, access to basic and beneficial ownership information, use of financial intelligence, and depriving criminals of their assets.
- However, the FATF observed that improvements were needed to strengthen the supervision and implementation of preventive measures in some non-financial sectors.
- **India need to address the delays in concluding prosecutions related to money laundering and terrorist financing**. Also India need to ensure that measures needed to counter the financing of terrorism & preventing the non-profit sector in terrorist financing, are implemented in line with the risk-based approach, including by conducting outreach to NPOs [Non-Profit Organisations] on their terrorist financing risks.
- The FATF has recognised the efforts made by India on the issue of mitigating the risks arising from ML/TF, including the laundering of proceeds from corruption, fraud, and organised crime, and the effective measures implemented by India to transition from a cash-based to a digital economy to reduce ML/TF risks.
- This recognition from the FATF is a testament to the rigorous and effective measures implemented by India over the last 10 years to safeguard its financial system from ML/TF threats.
- India, which has been a member of the FATF **since 2010**, is also a member of its Steering Group.
- The FATF is an **intergovernmental organisation** established in **1989** as the international watchdog to combat money laundering, terrorist financing, and other related threats to the integrity of the country.
- India has experienced several Nipah virus outbreaks, notably in West Bengal (2001 and 2007) and Kerala (2018, 2021, and 2023).
- Rapid identification and isolation of cases, contact tracing, and targeted screening of contacts are key to the effective containment of Nipah outbreaks.
- While many countries grant emergency approvals for diagnostics based on synthetic genomic material, India requires validation on clinical samples, which are not readily accessible. These limitations hamper rapid development.
- Even with ongoing avian influenza outbreaks in multiple States, we do not yet have the whole genome sequences available in GISAID which is the primary repository for influenza sequences. This hampers our understanding of the disease and its spread & more importantly, our ability to rapidly develop and deploy diagnostics.
- By decentralising testing facilities particularly at the district and sub-district levels, developing accessible and affordable diagnostic tests for Zika, Nipah, avian influenza, and many more emerging infectious diseases, India can ensure a more effective response to future outbreaks.

India, Pak delegations reach J&K to inspect power projects under Indus Water Treaty.

Why in news?

- Delegations from India & Pakistan, along with neutral experts reached J&K to inspect 2 power projects under Indus Water treaty. The two projects are **85 MW Ratle hydroelectric power project & 1000 MW Pakal Dul hydroelectric project.**

About the inspection

- The inspection of various under construction power projects was done in the Chenab valley region
- This is the first visit by a Pakistani delegation to J&K in more than 5 years under the dispute settlement mechanism of the 1960 treaty.
- India & Pakistan signed IWT after 9 years of negotiations, with the World Bank being a signatory of the pact which sets out a mechanism for cooperation and information exchange b/w the 2 sides on the use of a number of cross border rivers.
- A 3-member Pakistani delegation inspected the Pakul dam & Lower Kalnai hydroelectric power projects under the provisions of IWT for the first time in January 2019.
- The Pakal Dul hydroelectric project is located on the **Marusudar, which is a tributary of Chenab.**
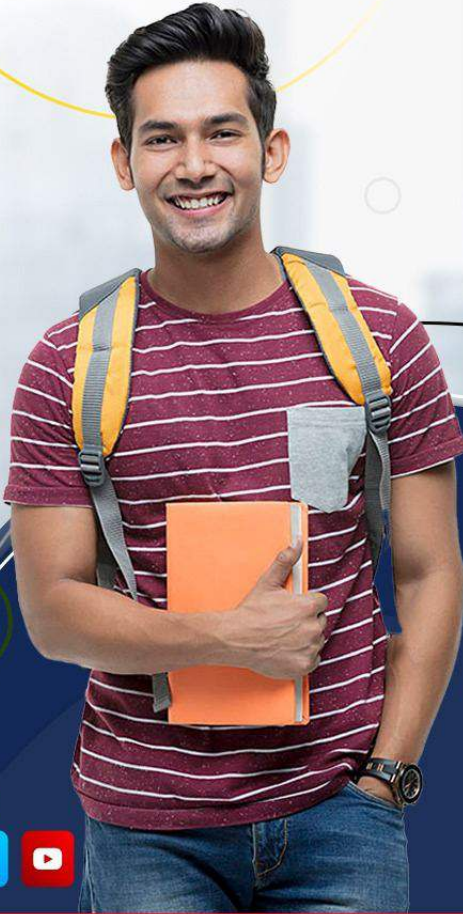
Scientists find new way to generate Virus-like particles in lab to fight against Nipah.

Why in news?

- Scientists at **Institute of Advanced Virology (IAV)** have developed a novel way of generating non- infectious **Nipah virus like particles (VLPs)** in the lab which mimic the wild-type Nipah virus.This method offers a safe and effective alternative platform for developing neutralizing antibodies against the Nipah Virus in a **biosafety level 2 (BSL-2) lab.**

About Nipah virus

- The **zoonotic virus** Nipah is a highly pathogenic **paramyxovirus**, with a fatality rate of 80%.
- Virus neutralization test is essential for **developing and evaluating vaccines and immunotherapeutic**, and for conducting basic research into the immune response and pathogenesis of Nipah virus. These tests, which traditionally require to be done in high security labs with the infectious organism, can now be safely done in BSL-2 labs in the country using the Nipah virus virus like particles (NiV-VLPs).
- The VLPs are molecules that **closely resemble viruses, but are non-infectious**.
- The genome of the nipah virus encodes **6 major proteins** – Glyco protein (G), fusion protein (F), Matrix (M), nucleocapsid (N), long polymerase (L) and Phosphoprotein (P).
- Scientists at IAV generated **HiBiT-tagged Nipah virus-like particles (Ni-VLPs)** using plasmid-based expression systems, encoding the NiV structural proteins G, F and M.
- The Virus Like Particles(VLPs) thus produced were **functionally identical to the native virus**. The inclusion of highly sensitive HiBiT tag on these VLPs accelerates their potential in antiviral drug screening and vaccine development.
- This study is the **first of its kind using HiBiT tagged NiV-VLPs**, demonstrating their application in neutralization tests.

China lands on Moon's far side in historic sample-retrieval bid

Why in news?

- China landed an unscrewed space craft on the **far side of the moon**. It was in line with its landmark mission **to retrieve world's first rock and soil samples** from the dark lunar hemisphere.

About landing

- The landing elevates China's space power status in a global rush to the moon, where countries including US, are hoping to exploit lunar minerals to sustain long-term astronaut missions and moon bases within the next decade.
- The **Chang'e -6 craft** is equipped with an array of tools. It touched down in a gigantic impact crater called **South Pole Aitken Basin** on the space facing side of the moon (far side of moon). **Long March-5 Y8 rocket** carried the Chang'e – 6 craft.
- This is **China's 2ⁿᵈ successful mission** on the far side of the moon.
- The side of the moon facing away from earth is having deep and dark craters. This is making communications and robotic landing operations more challenging.

JWST Spot earliest known Galaxy

Why in news?

- NASA's James Webb Space Telescope (JWST) has spotted the earliest-known galaxy, which is **surprisingly bright and big** considering it formed during the universe's infancy.

About JWST

- The galaxy existed about **290 million years after the Big Bang event** (initiated the universe roughly 13.8 billion years ago). This period spanning the universe's first few hundred million years is called cosmic dawn.
- This galaxy, called **JADES-GS-z14-0**, measures about 1,700-light years across
- A light year is the distance light travels in a year, which is **9.5 trillion km**. The galaxy has a mass equivalent to 500 million stars the size of our Sun and is rapidly forming new stars — about 20 every year.

- The second oldest-known galaxy, formed about 303 million years after Big Bang was discovered. That one, JADES-GS-z14-1, is smaller — with a mass equal to about 100 million sun-sized stars, measuring roughly 1,000 light years across and forming about two new stars per year.

Klebsiella Pneumoniae Bacteria

Why in news?
- Researchers of Columbia university suggested that, when Klebsiella Pneumoniae bacteria is infected by bacteriophages, it use reverse transcriptase to create a specific protein named Neo. This protein Neo can suspend the replication of bacteria cell and stop the spread of infection.
- A 'reverse transcriptase' enzyme converts the RNA into DNA.

Role of Reverse transcriptase
- It facilitated **rapid and accurate testing and detecting of SARS-2 virus**. Along with genome sequencing, it also held in tracking the spread of virus, paving the way for surveillance, better public infrastructure and vaccine development.
- It was discovered by **Howard Temin and David Baltimore** independently in **1970**.
- The discoveries by both the researchers showed that **information can flow from RNA to DNA**. It showed that **RNA could reverse-transcribe into DNA**, by suggesting in the research paper that **in the vesicular stomatitis virus, a protein called RNA Polymerase was involved in reverse- translating RNA to DNA**. This challenged the Central Dogma of molecular biology.
- Acc. to Central Dogma of molecular biology, in all living beings hereditary information flowed only from DNA to RNA and from RNA to protein.
- The discovery of reverse transcriptase had a significant effect on the management and treatment of HIV infections, including AIDS in 1980s.

Retroelements in human genome
- Reverse transcriptase also had a significant role in shaping human genome. The human genome is scattered in many places with sequences called elements, that appear to have originated from retrovirus. Thus, researchers call them retroelements.
- These retroelements transferred horizontally during the course of millions of years of evolution. The Horizontal gene transfer refers to genes jumping between organisms rather than from parent to offspring.
- The human endogenous retroviruses (a class of retroelements in human genome) is linked with neuropsychiatric disease in humans.
- The first bacterial reverse transcriptase was discovered in 1989.
- Types of retroelements - Group II introns, retrons & diversity generating retroelements.

Klebsiella Pneumoniae
- When the bacterial Klebsiella Pneumoniae is infected by bacteriophages, they use a non-coding RNA with specific structures that could bind to reverse transcriptase and instruct cells to create DNA. This DNA copy has multiple copies of a gene that can create a specific protein.
- The researchers named this protein as **Neo**. It could place the bacterial cell in a state of suspended animation, block its replication and stop the replication of bacteriophage infection.
- The role of reverse transcriptase in bacterial defense against bacteriophages highlights the potential of innovative applications in biotech and medicine and can also combat the antimicrobial disease.
- Further research on reverse transcriptions can reveal novel mechanisms of genetic evolution and viral resistance. It can lead to developing new therapeutic strategies and biotechnological tools.
- It is a **gram-negative, encapsulated, non-motile bacterium** found in the environment and has been associated with pneumonia in patient populations with alcohol use disorder or diabetes mellitus. The bacterium typically **colonizes human mucosal surfaces of the oropharynx and gastrointestinal (GI) tract**. Once the bacterium enters the body, it can display high degrees of virulence and antibiotic resistance.

Why in news?

- The ISRO will carry out the **3ʳᵈ and final RLV landing experiment (RLV LEX)**.

About RLV LEX

- RLV LEX missions involve taking an unmanned winged prototype named **Pushpak**, to a designated height and releasing it safely under varying conditions. In LEX-03, Pushpak will be carried to a **height of 4.5 km and 500 metres** to one side of the runway using an **IAF Chinook helicopter** and then released.
- In LEX-02 which was the 2ⁿᵈ mission, the altitude was same but the **lateral distance from the runway was 150 metres.**
- The LEX-03 mission will look at **how the sink rate, or the rate of descent, can be cut down to reduce he the impact load**. It will also have on board a real time kinematics (RTK) package.
- The **Vikram Sarabhai Space Centre** at Thumba was responsible for the design and development of Pushpak.
- In the next stage of tests under the RLV-TD, the ISRO will use an unmanned Orbital Re-entry Vehicle (ORV). The vehicle used will be 1.6 times the size of Pushpak used for LEX. It will be placed in a 400 km orbit around earth using a modified GSLV.
- This mission is expected in 2 years time.
- The ISRO had successfully carried out LEX-01 mission on 2ⁿᵈ April 2023 & the LEX-02 on 22ⁿᵈ March 2024.

Why in news?

- Aditya-L1 has captured **images of the sun and its dynamic activities** during the solar storm which occurred in May.

About L1 mission

- Between May 8 and 15, **several powerful solar flares erupted in the active region AR13664 on the Sun.** These flares were linked to bursts of solar material, known as **Coronal Mass Ejections (CMEs)**, which occurred on May 8 and 9.
- Acc. to ISRO, these photos captured by will help in **studying solar flares as well as energy distribution and sun spots**. This exercise will help in **understanding and predicting space weather while monitoring solar activity and UV radiation over a wide range of wavelength.** It will also help to understand long-term solar variations.
- ISRO reported that during these solar events, two of their remote-sensing instruments, the **Solar UltraViolet Imaging Telescope (SUIT)** and the **Visible Emission Line Coronagraph (VELC)**, were in their baking and calibration modes, respectively, and couldn't observe solar activity on May 10-11. However, the doors of SUIT and VELC were opened on May 14. In addition to capturing images, these instruments made some important observations.
- The VELC payload also carried out observations in one of the spectroscopic channels for the **emission line 5503 Angstrom.**
- On May 8 and 9, two other remote sensing instruments on board Aditya-L1, **SoLEXS and HEL1OS**, recorded these events. Meanwhile, the two in-situ instruments, ASPEX and MAG, captured the event on May 10 and 11 as it passed through the Sun-Earth L1 point (L1).

Lagrange Point

- For a two body gravitational system, the Lagrange Points are the positions in space where a small object tends to stay, if put there. These points in space for two body systems such as Sun and Earth can be used by spacecraft to remain at these positions with reduced fuel consumption.
- At Lagrange Points, the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them. These points in space can be used by spacecraft to reduce fuel consumption needed to remain in position.
- Lagrange Points are named in honour of Italian-French mathematician Joseph-Louis Lagrange.
- Of the five Lagrange points, three are unstable and two are stable. The unstable Lagrange points – labelled L1, L2, and L3 – lie along the line connecting the two large masses. The stable Lagrange points – labelled L4 and L5 – form the apex of two equilateral triangles that have the large masses at their vertices.

L1

- The closer an object is to the Sun, the faster it will move. So, any spacecraft going around the Sun in an orbit smaller than Earth's will soon overtake our planet. However, there is a loophole: if the spacecraft is placed directly between the Sun and Earth, Earth's gravity pulls it in the opposite direction and cancels some of the Sun's pull. With a weaker pull towards the Sun, the spacecraft needs less speed to maintain its orbit, so it can slow down. If the distance is just right – about a hundredth of the distance to the Sun – the spacecraft will travel slowly enough to keep its position between the Sun and the Earth. This is L1, and is a good position from which to monitor the Sun since the constant stream of particles from the Sun, the solar wind, reaches L1 about an hour before reaching Earth.

L2

- L2 is located 1.5 million kilometres directly behind the Earth as viewed from the Sun. L2 is a great place from which to observe the larger universe. A spacecraft here does not have to orbit Earth and so is spared from sweeping in and out of our planet's shadow, heating up and cooling down, and distorting its view.

L3

- L3 lies behind the Sun, opposite Earth, just beyond our planet's orbit. Objects in L3 cannot be seen from Earth. It offers the potential to observe the far side of the Sun. A spacecraft at L1, L2, or L3 is 'meta-stable', like a ball sitting on top of a hill. A little push or bump and it starts moving away, so a spacecraft must use frequent rocket firings to stay in so-called 'halo orbits' around the Lagrangian point.

L4 and L5

- L4 and L5 lie at 60° ahead of and behind the Moon in its orbit with respect to the Earth. Each one of them is a third point of an equilateral triangle with the base of the line defined by those two bodies. These Lagrangian points are stable for the Earth-Moon mass ratio. These Lagrangian points represent remarkable positions to host astronomical observatories or space stations. Unlike the other Lagrange points, L4 and L5 are resistant to gravitational perturbations. Because of this stability, objects such as dust and asteroids tend to accumulate in these regions.

Kavli Prize

Why in news?

- The Kavli Prizes are awarded in **three areas:** astrophysics, nanoscience and neuroscience — the largest, the smallest, and the most complex.

About the prize

- The Kavli Prize is awarded in honour of **Norwegian-American businessman and philanthropist Fred Kavli.**
- Fred Kavli founded Kavlico in **1958**. The company is a leading manufacturer of **pressure transducers** (devices which convert pressure into electric signal) which is used in a wide variety of industries from aviation to home appliances.
- Kavli established the Kavli Foundaion, which awards the Kavli Prize, in partnership with the Norwegian Academy of Science and Letters and Norwegian Ministry of Education and Research.
- **Since 2008, 73 scientists from 19 countries have been honoured with the biennial award.** Ten of them have gone on to win the Nobel Prize.
- While designed to be like Nobel Prize for its fields, the Kavli Prize is **not restricted to recent work, meaning it is wider in scope.**
- The Nobel is only awarded for achievements made during the preceding year.
- The prize comprises a **$1 million cash** prize (per field), a scroll, and a medal.
- **Three independent selection committees review entries** to present a unanimous recommendation to the Norwegian Academy of Science and Letters. **Each committee comprises five members**, who are nominated by science institutes around the world, including the Chinese Academy of Sciences, the French Academy of Sciences, Germany's Max Planck Society, the National Academy of Sciences in the US, and the Royal Society in the UK.
- All eight scientists awarded the Kavli Prize this year are professors at leading American universities.
- **In Astrophysics** - David Charbonneau of Harvard University, and Sara Seager of MIT. They were recognised for discoveries of exoplanets, and the characterisation of their atmosphere.
- **In Nanoscience** - Robert Langer of MIT, Armand Paul Alivisatos of the University of Chicago, and Chad Mirkin of Northwestern University.

- Langer was recognised for his idea of nano-engineering which could help the development of controlled drug delivery systems to treat diseases like aggressive brain cancer, prostate cancer and schizophrenia. Alitvisatos devised semiconductor crystals or "quantum dots" which could be used as multi-colour fluorescent probes in bio-imaging.
- Mirkin introduced the concept of spherical nucleic acid (SNA), a new class of nucleic acids that are densely functionalised and oriented spherically around a nanoparticle core. SNAs have wide- ranging use in areas like intracellular detection, gene regulation and immunotherapy.
- **In Neuroscience** – Nancy Kanwisher of MIT, Winrich Friewald of Rockefeller University and Doris Tsao of University of California at Berkely. They have been awarded for their collective effort over decades to map the linkage between facial recognition and the brain.

NSAs of India, USA review progress on iCET   Science & Technology

Why in news?
- NSA of India Ajit Doval & NSA of USA Jake Sullivan resolved to prevent the leakage of sensitive and dual-use technologies to countries of concern as they chaired the **2nd meeting of the initiative on Critical and Emerging Technology (iCET).**

About the meeting
- During the 2nd iCET meeting, the two NSAs set the vision for the next chapter of the strategic technology partnership.
- Mr. Sullivan's visit to India was cancelled twice earlier due to geopolitical developments.
- India & US are currently in advanced stages of talks for the purchase of **31 MQ-9B unmanned aerial vehicles** and licensed manufacture of **General Electric GE-414 jet engines as well as Stryker infantry vehicles.**
- On semiconductors which is a priority area for both countries, the two countries announced to launch a **new strategic partnership b/w General Atomics and Indian firm 3rdiTech** to develop semiconductor design and manufacture of precision guided ammunition and other national security-focused electronics platform.
- Both countries also decided to take several steps in **new and emerging areas** in order to address dependency on China.
- It was announced to **promote India's vital role on rare earth minerals sector**. It was decided to promote India's vital role in the Mineral Security Partnership, including through co-investing in a lithium resource project in South America and a rare earth deposit in Africa, to responsibly and sustainably diversify critical mineral supply chains.
- The ambitious **iCET** was announced by **PM Modi & US President Joe Biden** on the sidelines on the **Quad Summit in Tokyo in May 2022** and was launched by the NSAs in Jan 2023 comprising key technology sectors including **space, semiconductors, advanced telecommunications, artificial intelligence, quantum science, biotechnology and clean energy**. Later, new areas were included including biotechnology, critical minerals and rare earths processing technologies, digital connectivity, digital public infrastructure and advanced materials.

Critical and Emerging Technology (iCET)
- The Initiative on Critical and Emerging Technologies (iCET) is a framework agreed upon by India and the United States for cooperation on critical and emerging technologies.
- It was officially **launched in January 2023** and aims to deepen the bilateral strategic relationship between the two countries.
- The first iCET meeting was held in Washington, D.C., USA, in January 2023.
- The iCET focuses on several key areas, including:
  - **Artificial Intelligence (AI) Research Agency Partnership:** Collaboration on AI research and development.
  - **Defense Industrial Cooperation:** Joint development and production of defense technologies.
  - **Innovation Ecosystems:** Strengthening innovation ecosystems and promoting startups.
  - **Semiconductor Ecosystem Development:** Development of a semiconductor ecosystem in India.
  - **Cooperation on Human Spaceflight:** Collaboration on human spaceflight, including training for ISRO astronauts at NASA facilities.
  - **Advancement in 5G and 6G Technologies:** Collaboration on the development and deployment of 5G and 6G technologies.
  - **Adoption of OpenRAN Network Technology:** Adoption of OpenRAN network technology in India.

- **Defense Innovation and Technology Cooperation:** Collaboration on defense innovation and technology, including defense startups.
- **Resilient Semiconductor Supply Chains:** Strengthening semiconductor supply chains.
- **Science, Technology, Engineering, and Math (STEM) Talent:** Collaboration on STEM talent development and research partnerships.
- The iCET aims to promote cooperation in these areas to enhance the strategic partnership between India and the United States.

Expansion of Digi Yatra — Science & Technology

Why in news?
- Digi Yatra, which is a **check-in service at airports based on facial recognition technology**, may be implemented at hotels and public places like historical monuments.

About Digi Yatra
- Digi Yatra Scheme was conceived to **achieve contactless, seamless processing of passengers at airports based on Facial Recognition Technology (FRT).**
- It envisages that travelers pass through various checkpoints at the airport through paperless and contactless processing, using facial features to establish their identity, which would be linked to the boarding pass.
- With this technology, the entry of passengers would be automatically processed based on the facial recognition system at all checkpoints **– including entry into the airport, security check areas, aircraft boarding, etc.**
- Facial recognition technology is beneficial as it makes flying more convenient and reduces congestion at airports.

Objectives of Digi Yatra
- **Enhance Passenger Experience And Provide A Simple And Easy Experience For All Air Travellers:**
- Provide a seamless, paperless, and hassle-free experience for all passengers at all checkpoints at all Indian airports. (Including Tier-1, 2, and 3 airports).
- Improve passenger experience so that they can plan their trips efficiently.
- Get relevant information related to various facilities, protocols, airline times, and queue waiting times at the airport.
- Walk-through security scanners lead to increasingly advanced biometric security solutions.
- Stay connected through airports, and engage in customized digital offerings across experience areas, via airport Wi-Fi.

Digi Yatra enrolment process
- DigiYatra will have a centralized registration system for passengers. Passengers can create a **Digi Yatra ID** in a central system by providing details such as **Name, Email ID, Mobile Number, and Details of Identity** (Voter ID, Driving License, Aadhar, etc).
- On submission, a Digi Yatra ID will be created. Pax can quote this number while booking the ticket. Pax data including Digi Yatra ID will be passed on to the departure airport by the airlines.
- On first travel, the Pax has to go to the registration kiosk at the airport to validate the ID. In the case of Aadhar, the verification will be online. In case of other ID CISF will manually verify.
- On successful verification, the photo of the pax will be added to the Digi Yatra profile in a central system.

Implementing agency:
- This scheme is being implemented by the **Digi Yatra Foundation.** It is a **not-for-profit company** founded to implement the Digital Yatra Central Ecosystem whose shareholders comprise of:
  - **Airport Authority of India (AAI),**
  - **Cochin International Airport (CIAL),**
  - **Bangalore International Airport (BIAL),**
  - **Delhi International Airport Ltd. (DIAL),**
  - **Hyderabad International Airport Ltd (HIAL)**
  - **Mumbai International Airport Ltd (MIAL)**

Why in news?

- **Direct Seeding of Rice (DSR)** is a technique of sowing promoted by the Punjab government for the past several years.

About DSR seeding

- The DSR is also known as **Tar-Wattar technique** of sowing and sowing by the traditional transplantation method.
- Last year, only 1.73 lakh acres under paddy cultivation in Punjab (only 2%) were sown by DSR. The government's target is to bring 7 lakh acres under DSR this year, which is less than 10% of the total rice acreage.
- Traditionally, farmers prepare paddy seedlings in nurseries and after 25-35 days, replant the young plants in flooded fields. This is a labour intensive and water intensive method, but it maximizes the crop yield & lead to better crop health.
- The DSR **does not require nursery preparation or transplantation**. The paddy seeds are directly sown in the field 20-30 days ahead of when they would have been transplanted.
- After the field has been irrigated and prepared using a laser leveler, seeding is carried out using a seed drill or lucky seeder machine. It is crucial to treat the seeds – they are soaked in a fungicide solution for 8 hours & dried for half a day before sowing. The 1st round of irrigation is carried out 21 days after sowing, followed by another 14-17 rounds at 7-10 day intervals, depending upon the soil type and quality of monsoon. The final round of irrigation is done 10 days before harvesting.
- The Tar-Wattar technique can **reduce the water consumption in cultivation by 15-20%.** This is extremely important in water-scarce Punjab, where the groundwater level is rapidly decreasing and there is a risk of desertification.
- For DSR to be suitable, it is crucial that the **soil should be suitable**. The DSR should be **avoided in soils of a light texture**. It is more suitable for **heavy or medium-to-heavy textured soil**s. This is primarily because light-textured soil does not retain the water well.
- Heavy-textured soils contain more clay and less sand, whereas light-textured soils have less clay and more sand.
- The iron content of the soil determines the suitability of DSR. Soils that are severely deficient in iron are not suitable for Tar-Wattar DSR. The soils with plant-available iron are ideal for DSR. If iron supplements are used, farmers should apply ferrous iron (green in colour and not oxidized) rather than oxidized iron which is brown in colour.

H5N1 **Science & Technology**

Why in news?

- The **highly pathogenic avian influenza (HPAI) H5N1 strain** has been affecting cattle across several states in the US and for the first time, three cases of human infection in dairy farm workers were also reported.

About H5N1

- The H5N1 emerged in **1996**. The virus has since then infected about 26 mammals especially cattle. The recent emerging proof that it can infect humans, has heightened the threat perception that H5N1 could lead to the next global pandemic.
- The virus seems to spread from birds/animals to humans who may be closely interacting with these without adequate personal protection.
- B/W 2003 & 2004, about 900 human infections of H5N1 have been reported from 23 countries, of which more than half were fatal.
- Even though the risk of human infections from H5N1 is still perceived to be low, this can change rapidly as the virus spreads to more animals, especially cows or domestic mice, which have closer contact with humans.
- The common symptoms of H5N1 are **similar to those of influenza-A illnesses**, including respiratory difficulties, fever, cough, sore throat and pneumonia, all of which can potentially worsen, especially in those who are immunocompromised or have underlying conditions. In USA, the conjunctivitis or pink eye was the only symptom that was reported in one of the farm workers who was infected.
- **Early detection and containment of the infection is important** to prevent the extensive spread of virus.
- As of now, in Kerala, the only strategy adopted for containment is the mass culling of birds within the certain radius of the reported infection.

- People who have livestock and birds at home are being advised to wear masks and the antiviral
- **Tamiflu** is being prescribed as prophylaxis to people wherever H5N1 cases are found.
- There is a need for a robust and coordinated response to H5N1. The concept of '**One Health**' need to be prioritized and operationalized.
- **Kerala has taken 'One Health' beyond the conceptual framework** and the project is currently being implemented as part of the **World bank-aided 'Rebuild Kerala' projects in 4 districts viz. Alappuzha, Pathanamthitta, Kottayam & Idukki.** It has established a community based disease surveillance network, with 2.5 lakh volunteers trained in 'One Health' concept in these districts, who will report any unusual events or death of animal or birds in a locality so that early warning and preventive measures can be taken.

Sensorineural Deafness — Science & Technology

Why in news?
- Bollywood singer Alka Yagnik is diagnosed with a 'rare sensory neural nerve hearing loss' called Sensorineural Deafness.

About the ailment
- Sensorineural deafness is a type of hearing loss that happens because of **damage to the inner ear**, the place of origin of the nerve that runs from the ear to the brain, called the auditory nerve.
- The ear consists of external, middle and inner structures. When you respond to sound, your eardrum vibrates, which moves three tiny bones in your middle ear. These carry the sound to the cochlea, a fluid-filled chamber in your inner ear. The cochlea is lined with tiny hairs that vibrate when the sound waves hit them. These hairs convert the sound waves into an electrical signal to be sent to the brain.
- When there is damage or other problems in your outer or middle ear, they affect the eardrum or tiny bones. This is called external hearing loss. **Sensorineural hearing loss is caused by a problem in the inner ear**. So the tiny hair cells that move sound through the ear cannot function properly because of damage or viral infection.
- Unlike in the case of damage to the external or middle year, deafness due to damage to inner ear may not always be cured if not addressed promptly within 48 hours.

Dormant Supermassive Black Hole — Science & Technology

Why in news?
- Recently, researchers have observed a **dramatic brightening at the heart of galaxy**, which may be caused by super massive black hole awakening from dormancy.

About the black hole
- **Galaxy SDSS1335+0728** is located **360 million light years** from earth.
- Black holes are **extraordinary dense objects with very strong gravity**, such that even light can't escape. The environment around the black hole can be violent, as it swallows the material with is gravitational force.
- The researchers found that, a spinning disk of diffuse material has formed around the SDSS1335+0728 supermassive black hole, with some of the matter being consumed. Such a disk (called **accretion disk**) releases energy at very high temp., outshining the galaxy.
- A bright and compact region such as this, powered by a supermassive black hole at the centre of the galaxy, is called '**active galactic nucleus**'. These nuclei are characterised by emitting large amounts of energy at a variety of wavelengths.

India eyes breakthrough against Sickle cell — Science & Technology

Why in news?
- India is very close to develop a **gene therapy for sickle cell disease**, which is a genetic blood disorder with a high prevalence rate among the STs.

About Sickle Cell therapy
- The researchers were working to develop a gene therapy using CRISPR-Cas9 tool, which is a gene editing tool.

- This method will be used to treat sickle cell disease, **making India one of the first countries to do so.**
- The **National Conclave on Generating Awareness on Sickle Cell disease** was organized by Ministry of Tribal Affairs in collaboration with Bisra Munda Centre for AIIMS.
- US FDA approved CRISPR-Cas9 tech for a cell-based gene therapy to treat sickle cell disease in 2023.
- One of the main challenges for India was to find a way to make this therapy cost effective. Developing a gene therapy using CRISPR has been part of **India's mission to eradicate sickle cell disease by 2047.**
- Part of this mission is also to **conduct about 7 crore screenings among the vulnerable tribal populations across 17 states and UTs** of which three crore screenings have been achieved so far.
- The CRISPR-Cas9 system consist of an enzyme that **behaves like molecular scissors**, which can be directed to cut a piece of DNA at a precise location. This will then allow a guide RNA to insert a changed genetic code at the sites of the incision.
- The CRISPR system is believed to be **fast and most versatile of all.**

Methanol Poisoning — Science & Technology

Why in news?
- At least 38 people had died after consuming spurious liquor in the Kallakurichi district of Tamil Nadu.

About Methanol poisoning
- Liquor is differentiated by its alcohol content- from 5% or so of beer to 12% or so of wine to 40% or so of distilled spirits (all by volume).
- In the beverages consumed for recreational purposes, the alcohol is always ethanol.
- The ethanol is technically a **psychoactive drug that, in low doses, reduces the level of neurotransmission in the body**, leading to its typical intoxicating effects.
- As per WHO, **no level of the consumption of ethanol is safe for our health**. Long term use leads to dependence, heightens the risk of cancers and heart disease and may also cause death.
- Inside the body, the ethanol is **metabolized in the liver and the stomach** by alcohol dehydrogenase (ADH) enzymes to acetaldehyde. Then, the acetaldehyde is transformed into

Methanol
- The methanol molecule (CH_3OH) consists of one carbon atom bonded with 3 hydrogen atoms and one hydroxyl group.
- Schedule-1 of Manufacture, Storage and Import of Hazardous Chemical Rules 1989 includes methanol.
- The most common way to produce methanol is to **combine carbon monoxide and hydrogen in the presence of copper and zinc as catalysts** at 50-100 atm of pressure and 250 degree Celsius.
- In the pre-industrial era, people used to make ethanol by heating wood to a very high temperature.
- Methanol has several industrial applications, including as a **precursor to acetic acid, formaldehyde and aromatic hydrocarbons.** It is also used as a solvent and as anti-freeze.
- The deadliness of spurious liquor arises from methanol.
- The human body contains infinitesimal quantities of methanol as a result of eating some fruits. But even for an adult, more than 0.1 ml of pure methanol per Kg of body-weight can be devastating.

Treatment for methanol poisoning
- Once methanol is consumed, the body takes some time to completely eliminate it. **As much as 33% is still left behind after 48 hours.** It is completely absorbed via the gastrointestinal tract. And blood methanol level can reach its maximum value within 90 minutes.
- There are 2 immediate ways to treat methanol poisoning –
- **Administer pharmaceutical grade ethanol** – the ethanol competes very well with methanol for the ADH enzymes, which metabolise ethanol around 10 times faster. As a result, the methanol is kept from being metabolized to formaldehyde.
- Administer an antidote called **Fomepizole**, which has a similar mechanism. It slows the action of the ADH enzymes, causing the body to produce formaldehyde at a rate the body can quickly excrete, preventing the deadlier effects from kicking in.
- Individuals can undergo dialysis to remove methanol and formic acid salts from the blood, and mitigate damage to kidneys and the retina.

- They may administer folinic acid, which encourages the formic acid to break up into carbon dioxide and water. **Both Fomepizole and Folinic acid are in WHO's list of essential medicines.**

IIIT's Delhi project wins joint 2nd prize in global competition — Science & Technology

Why in news?
- A project by **Indraprastha Institute of information Technology, Delhi (IIIT-Delhi)**, has won the **joint second prize in trinity challenge's second competition**. The prize winning project is on **tackling the escalating threat of antimicrobial resistance (AMR).**

About the project
- The project '**AMRsense: empowering communities with a proactive one health ecosystem**', was led by **Tavpritesh Seth of IIT Delhi** in collaboration with **CHRI-PATH, 1mg.com and ICMR**.
- The AMRSense tackles these issues through **4 major components** –
- Community engagement by empowering CHWs with AI-assisted data recording tools for accurate and simplified data collection.
- Data integration by creating a unified AMR data ecosystem through the integration of antibiotic sales, consumption and WHONet-compliant surveillance data using open source tools and APIs
- Predictive analysis by using federated analytics across OneHealth ecosystem for integrative insights on AMR.
- AMRaura Scorecard for monitoring and evaluating AMR trends.

Measures Taken by Govt. of India to Tackle AMR
- Government is aware about the challenges posed by AMR in India and has taken following measures to address the issue:
  - AMR surveillance network has been strengthened by establishing labs in State Medical College. 36 sites in 26 States/UTs have been included in this network so far.
  - National action plan on containment of Antimicrobial Resistance (NAP-AMR) focusing on One Health approach was launched in 2017 with the aim of involving various stakeholder ministries/departments.
  - AMR Surveillance Network: ICMR has established AMR surveillance and research network (AMRSN) comprising 30 tertiary care hospitals, both private and government to generate evidence and capture trends and patterns of drug resistant infections in the country.
  - AMR Research & International Collaboration: ICMR has taken initiatives to develop new drugs /medicines through international collaborations in order to strengthen medical research in AMR.
  - Red Line Campaign: The Union health ministry's "Red Line Campaign" urges people not to use medicines marked with a red vertical line, including antibiotics, without a doctor's prescription.
  - This campaign is aimed at discouraging unnecessary prescription and over-the-counter sale of antibiotics causing drug resistance for several critical diseases including TB, malaria, urinary tract infection & even HIV.

Claude 3.5 Sonnet — Science & Technology

Why in news?
- **Anthropic has launched its latest AI model called Claude 3.5 Sonnet.** This is the company's first release in the upcoming Claude 3.5 AI model series.

About the model
- Anthropic claims that the Claude 3.5 outperforms its peers such as OpenAI's GPT-4o, Google's Gemini-1.5 Pro, Meta's Llama-400b, and even the company's proprietary models — Claude 3 Haiku and Claude 3 Opus.
- Claude 3.5 Sonnet operates at twice the speed of Claude 3 Opus. This performance boost, combined with cost-effective pricing, makes Claude 3.5 Sonnet ideal for complex tasks such as context-sensitive customer support and orchestrating multi-step workflows.
- Claude 3.5 Sonnet is a **large language model (LLM)**, and is part of the family of LLMs which is being developed by Anthropic.
- These models are known as **generative pre-trained transformers**, which means they have been pre-trained to predict the next word in large amounts of text.

- Claude 3.5 Sonnet is the predecessor to the Claude 3 Sonnet introduced in March of this year.
- Claude 3.5 Sonnet is likely to be the middle model (based on parameter size) in the upcoming series of AI models by Anthropic.
- Claude 3.5 Sonnet outperforms Claude 3 Opus by a huge margin. The new model is claimed to be twice as fast as the Claude 3 Sonnet.
- According to Anthropic, Claude 3.5 Sonnet sets some new industry benchmarks in capabilities such as **coding proficiency (HumanEval), graduate-level reasoning (GPQA), and undergraduate-level knowledge (MMLU).**
- Claude 3.5 Sonnet is exceptional at **writing high-quality content with a natural and relatable tone**.
- Based on the benchmark scores, Claude 3.5 Sonnet seems outstanding. It has outdone GPT- 4o, Gemini 1.5 Pro, and Meta's Llama 3 400B in seven out of eight overall benchmarks.

Vision capabilities of Claude 3.5 Sonnet
- Claude 3.5 Sonnet is the **strongest vision model of Anthropic**.
- A vision model in AI is a model capable of **interpreting and analysing visual data** such as images and videos.
- The improvements in Claude 3.5 Sonnet are **most noticeable for tasks that require visual reasoning such as decoding charts and graphs.** The model is also capable of **accurately transcribing text from imperfect images.**
- This ability to transcribe is what makes Claude 3.5 Sonnet **beneficial for retail, logistics, and financial services**, where AI may rely more on insights from an image, graphic, or illustration than from text.

Why in news?

- A recent report by **Organized Crime and Corruption Reporting Project** alleged that, the Adani Group in 2014 claimed that the low grade coal imported from Indonesia was of high quality. It then inflated its value and sold it to Tamil Nadu's power generation company, TANGEDCO.

About the issue

- The **Gross Calorific Value (GCV)** determines the **gradation of the coal**. The GCV is the **amount of heat energy that can be generated from burning the coal.**
- Coal being a fossil fuel is a **mixture of carbon, ash, moisture and a host of other impurities.** The higher the available carbon in a unit of coal, the greater is its quality or grade.
- There are **17 grades** of coal by this metric. The Grade 1 is the top quality coal, with the kilo of it yielding higher than 7000 Kcal. The lowest quality coal producing anywhere b/w 2200-2500 kcal.
- The most important uses of coal are in running thermal power plants or powering a blast furnace to produce steel and both require different kinds of coal.
- Coking coal is the kind needed to produce coke and thus require minimal ash content. Coke is an essential component of steel making.

Characteristics of Indian coal –

- Clean coal is formed when the carbon content has been increased by reducing the ash content.
- Coal plants have washing plants on site which can process the coal in ways that reduce ash and moisture content. They employ huge blowers to remove fine, coarse ash.
- The other method to clean coal is **coal gasification**. Here, the need to directly burn coal is bypassed by converting it into gas. By relying on an Integrated targeted gasification combined cycle system (IGCC), steam and hot pressurized air or oxygen gets combine with coal in a reaction that forces carbon molecules apart. The resulting Syngas (a mixture of carbon monoxide, hydrogen, CO_2, and water vapour) is then cleaned and burned in a gas turbine to produce electricity. Since ICGC power plants create 2 forms of energy (steam from gasification and syngas as fuel), they increase the efficiency of the coal used.
- India produced **997 million tonnes** of coal in **2023-24**, which is a 11% increase from previous year. Most of this was produced by the state owned Coal India Ltd. & its subsidiaries.
- As of March 2024, India produced **261 tonnes of coal**, of which 58 tonnes was coking coal.
- India is transitioning towards renewable energy. The renewable energy accounted for **71.5% of the record 13.6 GW power generation capacity** added by India in the first quarter of this year. The share of coal (including liginite) in the total power capacity dropped below 50% for the first time since 1950s.

Why in news?

- There is ongoing demand for revocation of the Agnipath Scheme.

About Agnipath scheme

- Agnipath is aimed to **recruit personnel below officer ranks** (soldiers, airmen, and sailors who are not commissioned officers) in the Indian Armed Forces **for a period of 4 years.**
- At the end of this tenure, up to **25% of these recruits**, the so called 'Agniveers', can join the services on a **permanent commission (another 15 years)**, subject to merit and organisational requirements.
- Aspirants between the ages of **17.5 years and 23 years** (up from 21 years) are eligible to apply. At present, all sailors, airmen and soldiers, **except the technical cade of the medical branch**, are recruited to the service under the scheme.
- Agniveers draw a basic salary of Rs 30,000-Rs 40,000 per month, and are entitled to other risk and hardship allowances.
- They contribute **30% of their monthly emoluments** to the Seva Nidhi fund, which the government matches. At the end of their service, they receive approximately **Rs 11.71 lakhs** (with interest) as a lump sum severance package from this fund, which is **exempt from income tax.**

- If they die on duty, their family receives **Rs 1 crore (including the Seva Nidhi package), and full pay for the period which the soldier could not serve.** In case of disability, an Agniveer can receive upto Rs 44 lakh as compensation.
- Unlike soldiers in regular service, **Agniveers do not draw pensions post-retirement**. Only the 25% of Agniveers who get absorbed into the forces after 4 years will get pension, although the initial four years of service will not be considered for these.

Agnoveers and coverage of insurance
- **All Agniveers are covered by a Rs. 48 Lakhs non-contributory life insurance policy, ensuring their families receive financial aid**. If the death is attributable to service, the family receives an additional Rs. 44 Lakhs ex-gratia payment, further supporting them during this difficult time.
- **If an Agniveer's service is cut short due to death, their family is entitled to receive payment for the remaining service period, including their Seva Nidhi contribution.**
- The scheme acknowledges the potential for service-related disabilities and offers support:
- The amount of compensation is determined by the percentage of disability assessed by medical authorities.
- Depending on the severity of the disability (ranging from 100% to 50%), Agniveers receive a one-time ex-gratia payment (Rs. 44 Lakhs for 100% disability, gradually reducing to Rs. 15 Lakhs for 50% disability), helping them manage their new circumstances.

Critics of this scheme
- The scheme creates a "lesser" cadre of soldiers, who work on the same tasks as those with full
- commission, but with lesser pay, benefits, and prospects.
- This disparity has caused significant disaffection among those who see military recruitment as a path to economic stability and upward mobility.
- Maintaining the integrity and transparency of the selection process for permanent roles within the armed forces post the initial four-year period, thereby upholding meritocracy and organizational efficiency.

Air Exercise "Tarang Shakti"   Defence & Security

- The **First multinational air exercise of IAF** named **Tarang Shakti 2024** will be held in August & is likely to be participated by 10 countries.
- The plan is to invite foreign countries with whom the IAF interacts regularly and has certain degree of interoperability.
- IAF is enriched with the **experience of Red Flag exercise** to host Tarang Shakti 2024. The exercise will be conducted in **2 phases.** The first will be held in Southern India & the second will be in the western sector.
- Among the countries sending contingents are **Australia, France, Germany, Japan, Spain, UAE, UK and USA**. Germany will deploy fighter jets and also an A-400M transport aircraft.
- The A-400M aircraft will be on show-case for the IAF, given that it is a contender for open tender for medium transport aircraft.
- The Red Flag exercise was hosted by **US Air Force (USAF).** It was concluded recently at **Eielson Air Force Base, Alaska**. This was the **2nd edition** of Red Flag this year. The exercise was hosted by USAF **4-times a year**. Apart from IAF, this edition saw participation of **Singapore Air Force, UK's Royal**
- **Air Force, Royal Netherlands Air Force and German Luftwaffe. The IAF deployed 8 Rafale fighters, supported by IL-78 mid-air refuellers for transatlantic ferry, as well as Globemaster aircraft.**

Why in news?

- According to **Stockholm International Peace Research Institute (SIPRI), nine nuclear armed nations** have continued to modernize their nuclear arsenals and several of them deployed new- nuclear capable weapon systems in 2023. These 9 nations are **USA, UK, Russia, France, India, China, Pakistan, North Korea & Israel.** The 9 nations spent a combined total of **$91.4 billion** on their arsenals.

- The Stockholm International Peace Research Institute (SIPRI), **established in 1966**, stands at the forefront of research in these critical areas.
- SIPRI Yearbook 2024, offers a **comprehensive overview of global military expenditure, international arms transfers, arms production, nuclear forces, armed conflicts, and multilateral peace operations.**
- At its core, **SIPRI Yearbook 2024 merges original data with cutting-edge analysis, derived from open sources, to provide valuable insights for policymakers, researchers, media, and the general public.**
- **It not only captures the current state of global security dynamics but also offers informed recommendations aimed at fostering peace and stability worldwide.**
- SIPRI Yearbook 2024 includes in-depth **assessments of world military spending** trends,**revealing insights into the international trade in arms, and analyses of nuclear arsenals and their implications for global security.**
- SIPRI's commitment to transparency and rigorous research ensures that its findings are credible and influential in shaping global discourse on security challenges.
- By disseminating factual data and expert analysis, **SIPRI Yearbook 2024 equips stakeholders with the necessary tools to navigate and address contemporary security threats effectively.**

Why in news?

- The Ministry of External Affairs (MEA) acknowledged the tragic loss of 2 Indian nationals who were recruited by the Russian Army amidst the ongoing conflict b/w Russia & Ukraine.

About Mercenaries

- A combatant is typically a **member of the armed forces of a party to the conflict**, whereas a mercenary is **recruited from a third-party state** unrelated to the conflict.
- Mercenaries usually engage in hostilities **motivated primarily by personal gains** as opposed to virtues of patriotism associated with regular combatants.
- **Article 47 of Additional Protocol-1 of Geneva Convention mentions 6 conditions under which a person qualify as a mercenary**. These are –
  - The person should be specially recruited locally or abroad in order to fight in an armed conflict.
  - The person has taken a direct part in the hostilities.
  - The person is motivated to take part in the hostilities essentially by the desire for positive gain and is promised by or on behalf of a party to the conflict, of material compensation in excess of the amount which is paid to combatants of similar ranks and functions in the armed forces of that party.
  - The person is neither a national of a party to the conflict nor a resident of territory controlled by a party to the conflict.
  - The person is not a member of the armed forces of a party to the conflict.
  - The person has not been sent by a state which is not a party to the conflict on official duty as a member of its armed forces.
- Under international humanitarian law, **being a mercenary itself does not constitute a specific crime**. However, if captured, they are **not entitled to prisoner-of-war status or any protected categories under the Geneva Convention**. This allows for their prosecution for war crimes or other grave breaches of humanitarian law.
- They may also face **charges under the domestic laws** of the detaining nation. However, the mercenaries **qualify for humane treatment** in accordance with the fundamental guarantees of humanitarian law, as mentioned in **Article 75 of Additional Protocol-1 of Geneva Convention**.
- The Africa states later started to express their reservations about this definition of mercenaries, as it only addressed international armed conflicts and overlooked civil wars, where mercenary activities were most

prevalent. This led to adoption of **Organization of African Unity Convention for the Elimination of Mercenarism in Africa in 1977** which included a more expensive definition of mercenaries.

- In **1989**, the UNGA adopted the '**International Convention against the Recruitment, Use, Financing and Training of Mercenaries**' that criminalized the recruitment, use, financing and training of mercenaries and also promoted inter-state cooperation in this regard. It also widened the prevailing definition of mercenaries as provided under the Additional Protocol-1 of Geneva Convention to include persons recruited for the purpose of participating in a concerted act of violence aimed to overthrow a government or otherwise undermine the constitutional order of a state or at undermining the territorial integrity of a state.

CDS releases blueprint for warfare in Cyberspace — Defence & Security

Why in news?
- CDS General Anil Chauhan released **India's 1ˢᵗ joint doctrine for cyberspace operations** during a meeting of the Chief of Staff Committee.

About the doctrine
- This was done in the backdrop of cyberspace emerging as a crucial and challenging domain in modern warfare.
- The joint doctrine will **guide commanders of the armed forces** in conducting cyberspace operations.
- Unlike territorial limits in the traditional domains of warfare, cyberspace is a 'global common and hence has shared sovereignty'.

> - The Indian Computer Emergency Response Team (CERT-In)
> - Cyber Surakshit Bharat
> - National Critical Information Infrastructure Protection Center (NCIIPC)
> - Appointment of Chief Information Security Officers
> - Personal Data Protection Bill
> - Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Center)
> - National Cyber Security Policy, 2013

Cabinet clears Scheme for Forensic Infra with outlay of Rs. 2200 crore — Def & Sec

Why in news?
- The Union Cabinet approved the **National Forensic Infrastructure Enhancement Scheme (NFIES)** in order to have more scientific investigations across the country so as to achieve better conviction rates in criminal cases.

About the scheme
- The scheme, with a financial outlay of Rs 2,254.43 crore during the period from 2024-25 to 2028-29, aims to establish campuses of **National Forensic Sciences University (NFSU)** across the country apart from setting up more central forensic science laboratories enhancing existing infrastructure of NFSU, Delhi.
- The new criminal laws mandate forensic investigation for offences involving punishment of 7 years or more because of which there will be a significant increase in the workload of forensic science laboratories. Further, there is a significant shortage of trained forensic manpower in the Forensic Science Laboratories (FSL) in the country.
- The establishment of additional off-campuses of the National Forensic Sciences University and new Central Forensic Science Laboratories would address the shortage of trained forensic manpower.

Over 5000 Myanmar refugees take shelter in Naga district of Manipur — Def & Sec

Why in news?

- About 5400 people from Myanmar have taken shelter in **Kamjong dstrict** of Manipur.

About the refugees

- The issue of undocumented migrants in the naga-dominated district has added another dimension to the ongoing ethnic conflict in the state b/w the tribal Kuki-zo people and the majority Meitei community.
- The Manipur's population includes people from **34 Schedule Tribes**, including the Kuki-Zo-Hmar people and the Nagas.
- Kamjong district shares its **eastern border with Myanmar**. To its west are Thoubal and Kangpokpi districts, dominated by Meitei & Kuki-Zo respectively.
- Since the 2021 military coup in Myanmar, many people have crossed over to Mizoram and Manipur due to shared ethnic ties with the people of these states.
- Union Home minister recently announced to **suspend the Free Movement Regime (FMR)** with Myanmar and added that the 1643 Km border would be fenced.
- The Assam rifles is deployed along the Manipur border.
- The **Assam Rifles (AR)** is a **central paramilitary** force which is responsible for **border security, counter-insurgency**, and maintaining **law and order** in Northeast India. Its primary duty is to guard the **Indo-Myanmar border**. It is one of the **Central Armed Police Forces (CAPF)** administered by the **Ministry of Home Affairs**. The Indian Army maintains its operational control. As a central police force, its recruitment, perks, promotions, and retirement policies are governed by CAPF rules. Approximately 80 % of the officers are deputed from the Army, while the remaining are drawn from the AR cadre. The AR is commanded by the **Director General of the Assam Rifles (DG AR),** appointed by the **Ministry of Home**

Defence Ministry signs 350ᵗʰ contract under iDEX for miniaturised satellite — Def & Sec

- The 350th contract under the **Innovations for Defence Excellence (iDEX),** the flagship initiative of the Ministry of Defence was signed with **SpacePixxel Technologies Pvt Ltd** for the design and development of a '**miniaturised satellite capable of carrying electro-optical, infrared, synthetic aperture radar, and hyperspectral payloads up to 150 kg'.**
  - This challenge is being led by the **Indian Air Force**.
  - This 350th iDEX contract will **enable innovation in space electronics**, wherein many payloads earlier deployed on dedicated large satellites are now being miniaturised.
  - The modular small satellite will **integrate multiple miniaturised payloads as per requirement**, providing advantages like faster and economical deployment, ease of manufacturing, scalability, adaptability, and less environmental impact.
  - SpacePixxel has been actively working to **build and launch high-resolution hyperspectral imaging satellites** to provide detailed earth observation data.
  - Established by the **DIO** under the **Department of Defence Production**, iDEX has launched 11 editions of the Defence India Start-up Challenge and recently unveiled the **Acing Development of Innovative Technologies with iDEX (ADITI) scheme** to promote innovations in critical and strategic defence technologies.

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