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Topic 1. SPACE SCIENCE AND TECHNOLOGY AWARENESS TRAINING (START)

Important for subject: Science and technology

START

Context:

- ❑ New introductory-level online training programme, named Space Science and Technology Awareness Training (START), was announced recently by the Indian Space Research Organisation (ISRO).

Key Highlights:

- ❑ It is an introductory-level training program for students.
- ❑ The programme will cover various domains of space science, including Astronomy & Astrophysics, Heliophysics & Sun-Earth interaction, Instrumentation, and Aeronomy.
- ❑ It will be delivered by scientists from Indian academia and ISRO centres.
- ❑ Objective is to provide students with introductory-level training in Space Science and Technology.

About ISRO:

- ❑ ISRO is the space agency of India.
- ❑ ISRO was previously the Indian National Committee for Space Research (INCOSPAR), set up by the Government of India in 1962, as envisioned by Dr. Vikram Ambalal Sarabhai.
- ❑ ISRO was formed on August 15, 1969 and superseded INCOSPAR with an expanded role to harness space technology.
- ❑ DOS (Department of Space) was set up and ISRO was brought under DOS in 1972.
- ❑ Headquarters : Bengaluru, Karnataka.
- ❑ Chairman of ISRO : Shri S. Somanath.




The Indian Space Research Organisation (ISRO) has announced a new introductory-level online training programme called **Space Science and Technology Awareness Training (START)**.

- The START programme is part of the ISRO's efforts to enable Indian students to become professionals in Space Science and Technology, as the organisation's Space Science exploration programme continues to expand into new domains.
- **START is aimed at postgraduate and final-year undergraduate students of Physical Sciences and Technology.**
- The programme will cover **various domains of Space Science, including Astronomy and Astrophysics, Heliophysics and Sun-Earth interaction, Instrumentation, and Aeronomy.** It will be delivered by scientists from Indian

academia and ISRO centres.

- The programme is intended to **provide students with an introductory-level training** in Space Science and Technology, giving them an overview of different facets of the field, research opportunities, and career options.
- The training will also emphasize the cross-disciplinary nature of Space Science, giving students insights into how the individual aptitudes can be applied to the field.
- The lectures will also cover topics on the Indian Space Science exploration program and research opportunities in Space Science and technologies.

Topic 2. PEOPLE ARE COMPLAINING ABOUT MERCURY IN RETROGRADE. BUT WHAT DOES IT ACTUALLY MEAN?

Important for subject: Science and Technology

Humans found out retrograde motion was an optical illusion 500 years ago. However, the pseudoscientific practice of astrology continues to ascribe a deeper meaning to this illusion. When we say that a planet is in retrograde it means that from the perspective of Earth, a planet's motion across the sky goes backwards night after night compared to its usual direction for a period of time.

- This happens when Earth overtakes a slower-moving planet in its orbit around the Sun, or is overtaken by a faster-moving planet.
- **Retrograde motion is technically called “apparent retrograde motion” since it’s not an actual change** in the planet’s motion through space, but rather an effect caused by our perspective from Earth.

What causes Retrograde Motion?

- Every planet moves around the Sun in the same direction. Normally, when you observe a planet’s location in the sky over several nights, each night it will appear to have moved a little farther in one direction relative to the stars behind it.
- When a planet is in retrograde, it appears to move a little farther to the opposite direction each night instead.
- This happens because the closer a planet is to the Sun, the faster it moves in its orbit around the Sun. **This means that Mercury and Venus move through space more quickly than Earth, and will occasionally lap Earth just like runners moving**

more quickly around a track.

- Likewise, the more distant planets Mars, Jupiter, Saturn, Uranus, and Neptune all move slower than Earth, and will occasionally be lapped by Earth.
- Just like runners on a track, when a faster runner catches up to and then overtakes a slower one, the slower one's motion relative to the faster one is backwards, even though both are moving forwards.

What does it mean when we say Mercury is “in retrograde”?

- **Retrograde motion works a little differently for Venus and Mercury.** Because these planets orbit between Earth and the Sun, we tend not to see them high in the night sky.
- We mostly see them in the morning or evening, when they aren't either directly between us and the Sun or on the far side of the Sun.
- Most of the time, both planets move from east to west in Earth's skies. But as Mercury, for example, speeds past Earth in its super-fast orbit and starts to turn around the Sun to pass to the other side, we see it slow in its east-to-west motion and start to move in the opposite direction as it takes that turn.
- Because **Mercury only takes 88 days to orbit the Sun compared to Earth's 365, it overtakes us in this way three to four times a year, appearing to move backwards for about three weeks at a time.** This frequency is probably the reason that Mercury's is the most famous of the retrogrades

Topic 3. 25TH ANNIVERSARY OF POKHRAN-II: INDIA'S JOURNEY TO BECOME A NUCLEAR POWER

Important for subject: Science and technology



Pokhran-I was carried out on May 18, 1974

INDIA'S FIRST NUCLEAR WEAPON EXPLOSION

Was detonated on the army base **Rajasthan Pokhran Test Range** by the Indian Army

Was the **first confirmed** nuclear test by a nation outside the five permanent members of the UN Security Council

Dr PK Iyengar created & designed the bomb while **Dr Raja Ramanna** was the project head

The explosive yield was estimated to be around **8kt**. It weighed **1,400 kg**

India successfully conducted three nuclear bomb test explosions at the testing site in Pokhran on May 11, 1998. While these tests caused an international outcry at the time, they cemented India's status as a nuclear power

India's Nuclear Journey:

- India's nuclear programme can be traced to the work of physicist **Homi J Bhaba**. In 1945, after Bhaba's successful lobbying of India's biggest industrial family, the Tata Institute of Fundamental Research was opened in Bombay. **TIFR was India's first research institution dedicated to the study of nuclear physics.**
- Post independence, with continuous effort from **Homi J Bhaba in 1954, the Department of Atomic Energy (DAE) was founded, with Bhabha as director.**
- A pivotal moment in India's nuclear journey came after it suffered a **crushing defeat in the 1962 Sino-Indian War** and China's subsequent nuclear bomb test at Lop Nor in 1964.
- Prime Minister Lal Bahadur Shastri first tried to attain nuclear guarantees from established nuclear weapons states, when such guarantees did not emerge, a different route had to be taken.
- Things were further accelerated, when in 1965, India went to war with Pakistan once again, with China openly supporting Pakistan this time. Effectively, India was surrounded by two unfriendly nations, and needed to take steps towards building self-sufficiency.
- By the 1960s, discourse around nuclear disarmament and non-proliferation had shifted to the mainstream as the Cold War arms pushed the US and the USSR to great extremes.
- After China successfully tested its own bomb, there was increasing international consensus among the big powers regarding the need for a non-proliferation treaty

The "discriminatory" NPT

- **In 1968, the Non-Proliferation Treaty (NPT) came into existence.**
- The treaty **defines nuclear-weapon states** as those that have built and tested a nuclear explosive device before **January 1, 1967 – the US, Russia (formerly USSR), the UK, France and China** – and effectively disallows any other state from acquiring nuclear weapons.

- While the treaty has been signed by almost every country in the world, **India is one of the non signatories.**

Pokhran-I and its aftermath

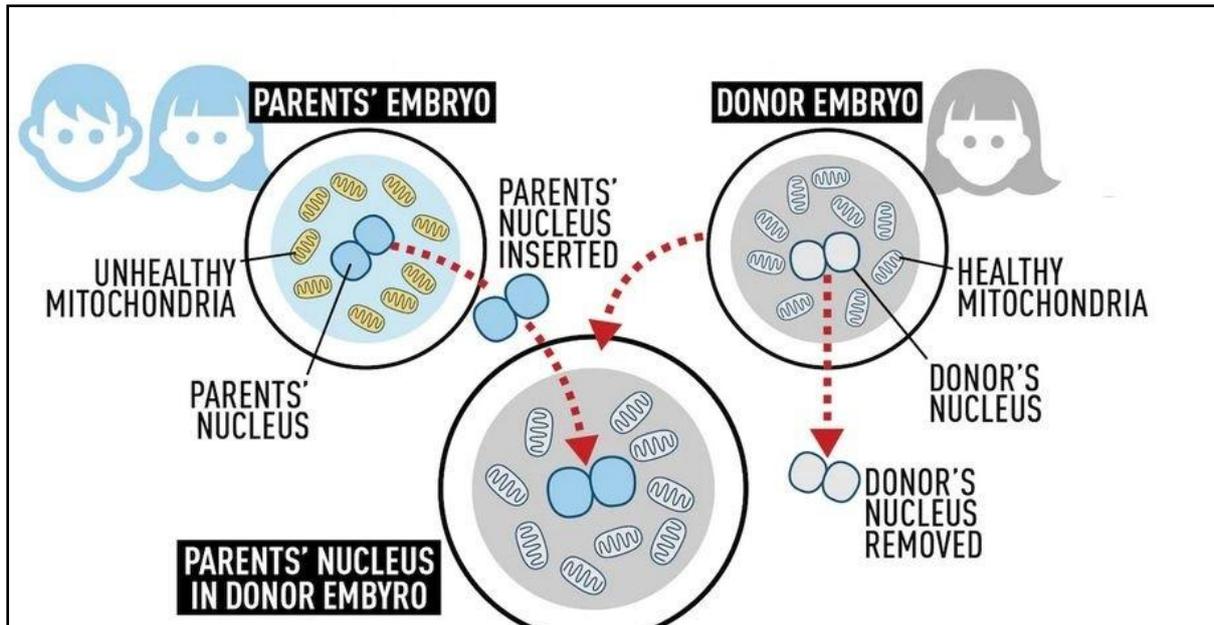
- By the 1970s, India was capable of conducting a nuclear bomb test. Bhaba's successor at the DAE, Vikram Sarabhai had worked to significantly broaden India's nuclear technology. **On May 18, 1974, with support from Indira, India carried out its first nuclear test at the Pokhran test site. Pokhran-I, codenamed Operation Smiling Buddha,** would be billed as a "peaceful nuclear explosion", with "few military implications".
- However, there was near-universal condemnation and countries like the US and Canada imposed significant international sanctions on India. These sanctions would be a major setback for India's nuclear journey, and majorly decelerate its progress.
- **In 1983, the Defence Research and Development Organisation's (DRDO) funding was increased and Dr APJ Abdul Kalam was put in charge of India's missile programme.**
- That year, India also developed capabilities to reprocess plutonium to weapons grade. Furthermore, throughout the decade, India exponentially increased its plutonium stockpiles. **With the fall of the USSR in 1991, India lost one of its biggest military allies, since the time Indira Gandhi had signed a 20-year security pact with it in 1971.** Furthermore, the US continued to provide military aid to Pakistan despite its own misgivings with its nuclear weapons programme.

Pokhran-II: projecting India's strength

- In March 1998, Pakistan launched the Ghauri missile – built with assistance from China. Two months later, **India responded with Operation Shakti.**
- While the 1974 tests were ostensibly done for peaceful purposes, **the 1998 tests were the culmination of India's nuclear weaponisation process.** Consequently, the Indian Government declared itself as a state possessing nuclear weapons following Pokhran-II.
- While the tests in 1998 also invited sanctions from some countries (like the US), the condemnation was far from universal like in 1974.

Topic 4. U.K. SEES SUCCESS IN MITOCHONDRIAL REPLACEMENT THERAPY

Important for subject: Science and technology



The United Kingdom was the first country to approve a reproductive technique known as **Mitochondrial replacement therapy (MRT)**.

- The Human Fertilisation and Embryology Authority (HFEA) reported that “less than 5” children have been born using the procedure.
- HFEA is a fertility regulator in the U.K. that approves In Vitro Fertilization (IVF) based procedures on a case-by-case basis.
- In 2022, Australia became the second country to approve the MRT procedure.

About Mitochondrial Replacement Therapy (MRT):

- It is a new form of reproductive in-vitro fertilization (IVF) which works on the principle of replacing a women’s abnormal mitochondrial DNA (mt-DNA) with the donor’s healthy one.
- People have two types of DNA in their cells, nuclear DNA, which is inherited from both parents and mitochondrial DNA (mtDNA), which is inherited only from the mother.
- MRT is designed to prevent women who are carriers of mitochondrial diseases from passing on these heritable genetic diseases to their children.

How is MRT carried out?

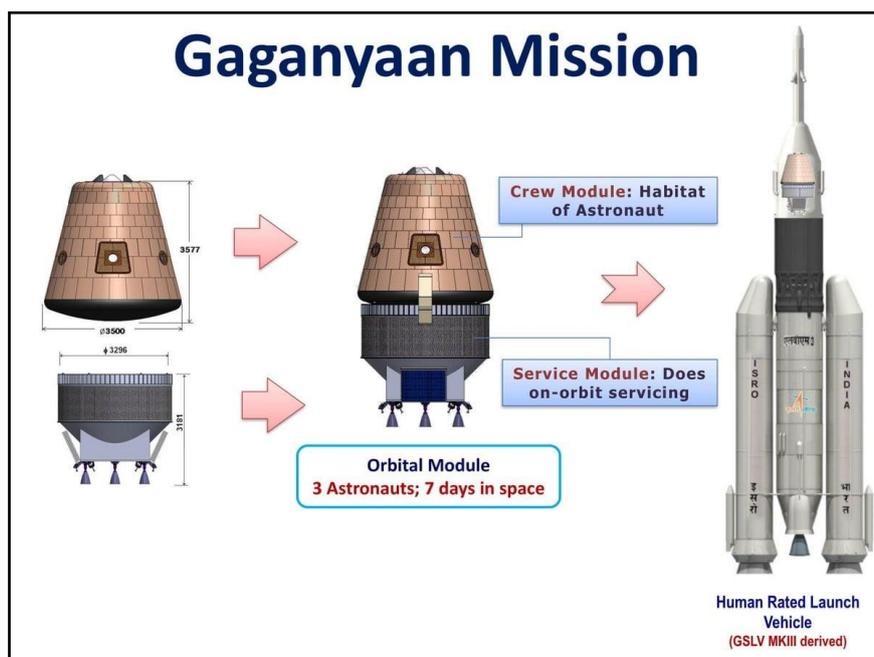
- MRT involves **using an egg from an egg donor who doesn't have mutations.**
- The nucleus of the egg is removed and replaced with the nuclear DNA from the woman who has mitochondrial DNA mutations.
- The egg is then fertilized with the father's sperm in the embryology lab.
- If it grows into an embryo for transfer during IVF treatment, the embryo would be free of mitochondrial disease.

Mitochondria:

- Mitochondria are **membrane-bound cell organelles that generate most of the chemical energy needed to power the cell's biochemical reactions.**
- Mitochondria are often referred to as the **powerhouses of the cell.**
- **Chemical energy produced** by the mitochondria is **stored in a small molecule called adenosine triphosphate (ATP).** ATP is the chemical energy "currency" of the cell that powers the cell's metabolic activities.
- Generally, mitochondria, and therefore mitochondrial DNA, are inherited only from the mother.

Topic 5. GAGANYAAN

Important for subject: Science and Technology



Indigenously developed parachutes for the safe return of the capsule that will carry astronauts under the proposed Gaganyaan programme are set to undergo fitment tests at an Indian Space Research Organisation (ISRO) facility in Bengaluru.

- **The Aerial Delivery Research and Development Establishment (ADRDE), the Agra-based laboratory under the Defence Research and Development Organisation (DRDO),** has developed the parachutes for India's manned space flight programme, Gaganyaan, which envisages putting a crew of three astronauts in low-earth orbit.
- The parachute configuration consists of 10 parachutes.
- During flight the sequence starts with deployment of two parachutes of "apex cover separation parachute", which is protection cover for the crew module parachute compartment, followed by two more of "drogue parachute deployment" to stabilise and bring down the velocity.
- Upon the drogue parachute release, three parachutes of the "pilot parachute" system will be used to extract three parachutes of the "main parachute" individually, to reduce the speed of the crew module to safe levels during its landing, the statement explained.
- Stating that each parachute's performance must be evaluated by complex testing methods, the ADRDE said that individual parachutes have undergone sub-system level testing.
- India's maiden human space flight 'H1' mission is targeted to be launched in the fourth quarter of 2024. In view of the paramount importance of crew safety, two test vehicle missions are planned before the 'G1' mission to demonstrate the performance of crew escape system and parachute-based deceleration system for different flight conditions.
- "The uncrewed 'G1' mission is targeted to be launched in the last quarter of 2023 followed by the second uncrewed 'G2' mission in the second quarter of 2024, before the final human space flight 'H1' mission in the fourth quarter of 2024," he stated.
- The first uncrewed flight 'G1' mission is aimed at validating the performance of human-rated launch vehicle, orbital module propulsion system, mission management, communication system and recovery operations. The mission will carry a humanoid as payload.
- The astronaut-designates for the human space flight mission are currently undergoing

their mission-specific training at Bengaluru with the second semester of crew training currently underway.

- The first semester of astronaut training included modules on theoretical basics, space medicine, launch vehicles, spacecraft system and ground support infrastructure. Regular physical fitness sessions, aeromedical training and flying practice are also part of crew training.
- Corresponding evaluation and assessment activities have also been completed.

Gaganyaan

- Gaganyaan project envisages demonstration of human spaceflight capability by launching crew of 3 members to an orbit of 400 km for a 3 days mission and bring them back safely to earth, by landing in Indian sea waters.
- The project is accomplished through an optimal strategy by considering inhouse expertise, experience of Indian industry, intellectual capabilities of Indian academia & research institutions along with cutting edge technologies available with international agencies.
- The pre-requisites for Gaganyaan mission include development of many critical technologies including human rated launch vehicle for carrying crew safely to space, Life Support System to provide an earth like environment to crew in space, crew emergency escape provision and evolving crew management aspects for training, recovery and rehabilitation of crew.
- Various precursor missions are planned for demonstrating the Technology Preparedness Levels before carrying out the actual Human Space Flight mission.
- These demonstrator missions include Integrated Air Drop Test (IADT), Pad Abort Test (PAT) and Test Vehicle (TV) flights. Safety and reliability of all systems will be proven in unmanned missions preceding manned mission.

Human related LMV3

- LVM3 rocket – The well proven and reliable heavy lift launcher of ISRO, is identified as the launch vehicle for Gaganyaan mission. It consists of solid stage, liquid stage and cryogenic stage.
- All systems in LVM3 launch vehicle are re-configured to meet human rating requirements and christened Human Rated LVM3. HLVM3 will be capable of

launching the Orbital Module to an intended Low Earth Orbit of 400 km.

- HLVM3 consists of Crew Escape System (CES) powered by a set of quick acting, high burn rate solid motors which ensures that Crew Module along with crew is taken to a safe distance in case of any emergency either at launch pad or during ascent phase.

Orbital Module

- Orbital Module (OM) that will be Orbiting Earth comprises of Crew Module (CM) and Service Module (SM). OM is equipped with state-of-the-art avionics systems with adequate redundancy considering human safety.
- CM is the habitable space with Earth like environment in space for the crew. It is of double walled construction consisting of pressurized metallic Inner Structure and unpressurised External Structure with Thermal Protection System (TPS).
- It houses the crew interfaces, human centric products, life support system, avionics and deceleration systems. It is also designed for re-entry to ensure safety of the crew during descent till touchdown.
- SM will be used for providing necessary support to CM while in orbit. It is an unpressurized structure containing thermal system, propulsion system, power systems, avionics systems and deployment mechanisms.

Crew training

- Astronaut Training Facility established in Bengaluru caters to Classroom training, Physical Fitness training, Simulator training and Flight suit training.
- Training modules cover academic courses, Gaganyaan Flight Systems, Micro-gravity familiarization through Parabolic Flights, Aero-medical training, Recovery & Survival training, mastering of Flight Procedures and training on Crew Training Simulators.
- Aero medical training, Periodical flying practice and Yoga are also included as part of the training.

Topic 6. HOW OLD ARE SATURN'S RINGS? NEW RESEARCH HAS ANSWERS

Important for subject: Science and Technology

Researchers have pegged the planet Saturn's rings' age at no more than 400 million years old

What are the new findings?

- **Saturn's rings are remarkably young, much younger than Saturn itself, which is about 4.5 billion years old.**
- The researchers arrived this by studying tiny grains of rocky material washing through the Earth's solar system on an almost constant basis.
- In some cases, this flux can leave behind a thin layer of dust on planetary bodies, including on the ice that makes up Saturn's rings
- Think about the rings like the carpet in your house. "If you have a clean carpet laid out, you just have to wait. Dust will settle on your carpet. The same is true for the rings
- Scientists used an instrument called the **Cosmic Dust Analyzer aboard US's NASA's late Cassini spacecraft to analyse specks of dust flying around Saturn**
- Based on calculations on the 163 grains collected over those 13 years, all of which had originated from beyond the planet's close neighborhood, Saturn's rings have likely been gathering dust for only a few hundred million years
- Saturn hosts seven rings comprised of countless chunks of ice, most no bigger than a boulder on Earth
- The **spacecraft Cassini first arrived at Saturn in 2004 and collected data until it purposefully crashed into the planet's atmosphere in 2017.**

What is Saturn Rings?

- Saturn's rings are **thought to be pieces of comets, asteroids, or shattered moons that broke up before they reached the planet, torn apart by Saturn's powerful gravity**
- They are made of billions of small chunks of ice and rock coated with other materials such as dust
- The ring particles mostly range from tiny, dust-sized icy grains to chunks as big as a house. A few particles are as large as mountains.

- The rings would look mostly white if you looked at them from the cloud tops of Saturn, and interestingly, each ring orbits at a different speed around the planet.

Additional Information:

- Saturn is made mostly of **hydrogen and helium**.
- At Saturn's center is a dense core of metals like iron and nickel surrounded by rocky material and other compounds solidified by intense pressure and heat.
- It is **enveloped by liquid metallic hydrogen inside a layer of liquid hydrogen**
Saturn is the only planet in our solar system with an average density that is less than water.
- As a gas giant, Saturn doesn't have a true surface. The planet is mostly swirling gases and liquids deeper down

Topic 7. MITOCHONDRIAL REPLACEMENT THERAPY (MRT)

Important for subject: Science and technology

Mitochondrial replacement therapy (MRT) is a new form of reproductive invitro fertilization (IVF) which works on the principle of replacing a women's abnormal mitochondrial DNA (mt-DNA) with the donor's healthy one.

What are Mitochondrial Disorders?

- Just as our bodies have organs that perform particular functions, each cell within the body has small structures, aptly termed organelles, which have specific, life-sustaining jobs.
- For example, one of the primary organelles in each cell is the nucleus, which contains our DNA, or genetic information. Another type of organelle is mitochondria, which function to provide our cells, and thus our bodies, with energy. Interestingly, mitochondria also contain a very small amount of DNA, making them the only organelle other than the nucleus to house genetic information
- Similar to nuclear DNA, mitochondrial DNA serves an important purpose, namely providing the genetic blueprint for molecular machines called proteins that carry out cellular functions.
- However, this capacity of mitochondria to carry DNA also makes them a genetic liability of sorts. Specifically, just like nuclear DNA, mitochondrial DNA is

susceptible to mutations in the DNA code that can cause disease. If these DNA mutations lead to the production of damaged mitochondrial proteins, they can cause a class of diseases termed **mitochondrial disorders**.

- Mitochondrial disorders are fairly common, affecting at least 1 in 5,000 births in the United States, and they exhibit a very unique inheritance pattern. Unlike nuclear DNA, which is passed in equal parts to a child from both parents, mitochondria are inherited solely from mothers. As such, if a mother has damaged mitochondrial DNA, she will pass this on to all of her children causing disease of a varied severity depending on the proportion of healthy and damaged mitochondria the child randomly inherits
- To avoid this, scientists have developed techniques that allow them to use mtDNA from a donor, along with DNA from a mother and father. These are generally called mitochondrial replacement therapies, or MRT.
- There are a few different ways of doing this, but most teams use one of two approaches. Some scoop out the nuclei of two eggs, one from a prospective parent and one from a donor.
- Then they put the would-be parent's nucleus into the egg of the donor, which still contains the cytoplasm, the fluid outside the nucleus that holds the mitochondria.
- The resulting egg can then be fertilized with sperm, creating an embryo that technically has three genetic parents.

Step-by-Step Process –

- First, sperm from the father is used to fertilise eggs from the affected mother and a healthy female donor.
- The nuclear genetic material from the donor's egg is then removed and replaced with that from the couple's fertilised egg.
- The resulting egg has a full set of chromosomes from both parents, but carries the donor's healthy mitochondria instead of the mother's faulty ones.
- This is then implanted in the womb.
- The resulting baby has DNA from the mother and father as usual, plus a small amount of genetic material – about 37 genes – from the donor.
- The process has led to the phrase “three-parent babies”, though more than 99.8% of the DNA in the babies comes from the mother and father.

- The development of healthy baby free from genetic disorders and to terminate the lethal mitochondrial disorders is the chief motive of this technique.

Is MRT Procedure Risk-Free?

- The **procedure is not without risks.**
- Recent research has found that in some cases, the tiny number of abnormal mitochondria that are inevitably carried over from the mother's egg to the donor egg can multiply when the baby is in the womb.
- So-called reversion or reversal could lead to a disease in the child.
- So far, the clinical experience with MRT has been encouraging, but the number of reported cases is far too small to draw any definitive conclusions about the safety or efficacy.
- Long-term follow-up of the children born through MRT is essential.

Legality of MRT:

- The United Kingdom, in 2016, became the first country in the world to legalise MRT.
- Last year, Australia became the second country to approve this therapy.
- In the United States, the therapy is illegal as it is considered as a form of genetic modification, and changes made to eggs, and sperm and embryos — known as germline modification — can be passed on to future generations.

Mitochondrial Diseases

- Certain defects might occur impacting on the way the mitochondria produces energy for the cells (Specially in the 'energy-hungry' tissues of the brain, nerves, muscles, kidneys, heart, liver), and thereby impacting cell function.
- The **diseases that arise out of such mitochondrial mutations are called mitochondrial diseases.**
- When the mitochondria are impaired and do not produce sufficient energy, that affects how the organs function, leading to a broad assortment of symptoms across the body, including brain damage, organ failure and muscle wastage.
- **Mitochondria makes up less than 0.0005% of our entire DNA. But since the child receives it only from the mother, any aberrations in her mitochondrial DNA that**

may cause diseases is passed on completely to the child.

- According to the New York Stem Cell Foundation Research Institute, approximately 1 in 5,000-10,000 children are born each year with mitochondrial disease.

Topic 8. MOD APPROVES 4TH POSITIVE INDIGENIZATION LIST FOR DPSUS

Important for subject: Science and Technology

Defence Ministry has approved the **4th Positive Indigenisation List (PIL)** of 928 strategically-important Line Replacement Units (LRUs), sub-systems, spares and components, including high-end materials and spares, with import substitution value worth ₹715 crore, a Ministry statement said on Sunday.

- These will **only be procured from the Indian Industry after the timelines** indicated on the list.

Building upon Previous PILs

- The **4th Positive Indigenisation List is a continuation of the previous three PILs** that were published in December 2021, March 2022, and August 2022, respectively.
- Combined, these lists have already facilitated the indigenisation of 2,500 items.
- The current PIL aims to further indigenize 1,238 items within the specified timelines.
- This progressive approach showcases the steady growth of indigenous manufacturing capabilities in the defence sector.

Positive Indigenisation List (PIL)

- The positive indigenisation list essentially means that the Armed Forces—Army, Navy, and Air Force—will only procure the listed items from domestic manufacturers.
- The manufacturers could be private sector players or Defense Public Sector Undertakings (DPSUs).
- This concept was **rolled out in the Defence Acquisition Procedure (DAP) 2020**.

Potential Benefits:

- It will give a **boost to indigenisation** with active participation of public and private sector for fulfilling the twin objectives of achieving self-reliance (Atmanirbhar Bharat) and promoting defence exports.

- **Import substitution of ammunition** which is a recurring requirement has been given special focus.
- Not only does the list recognise the potential of the local defence industry, it will also invigorate impetus to domestic Research & Development by attracting fresh investment into technology and manufacturing capabilities.
- It also provides an excellent opportunity for ‘start-ups’, as Micro, Small, and Medium Enterprises (MSMEs) will get a tremendous boost from this initiative.

Topic 9. KERALA SEED FARM DECLARED AS FIRST CARBON NEUTRAL FARM

Important for subject: Environment

Kerala Chief Minister declared a seed farm, **located in Aluva** here, as the first carbon neutral farm in the country.

- **A significant reduction in carbon emission** has helped the seed farm, under the Agricultural Department, achieve carbon neutral status.
- The **total amount of carbon emission from the farm**, located at Thuruthu in Aluva, in the last one year was 43 tons but its overall procurement was 213 ton.
- Compared to the emission rate, as many as 170 tons of more carbon have been procured at the farm, which helped it to be declared as the first carbon neutral seed farm in the country.
- The Kerala state will **introduce carbon-neutral farming methods in selected locations**, for which the government has allocated ₹6 crore in the 2022-23 Budget.
- In the **first phase, carbon-neutral farming will be implemented in 13 farms under the Agriculture department** and tribal areas, and steps are on to convert the State Seed Farm at Aluva a carbon-neutral farm.
- In the **second phase, model carbon-neutral farms will be developed in all the 140 Assembly constituencies.**

Carbon Neutral Farming

- Carbon neutral farming refers to the **practice of agricultural methods that do not emit more carbon than they sequester** from the atmosphere.
- It involves **implementing practices that reduce greenhouse gas emissions** and

promoting methods that increase carbon sequestration. Examples of carbon neutral farming practices **include reducing the use of fossil fuels, promoting the use of renewable energy sources, reducing tillage, and promoting cover crops.**

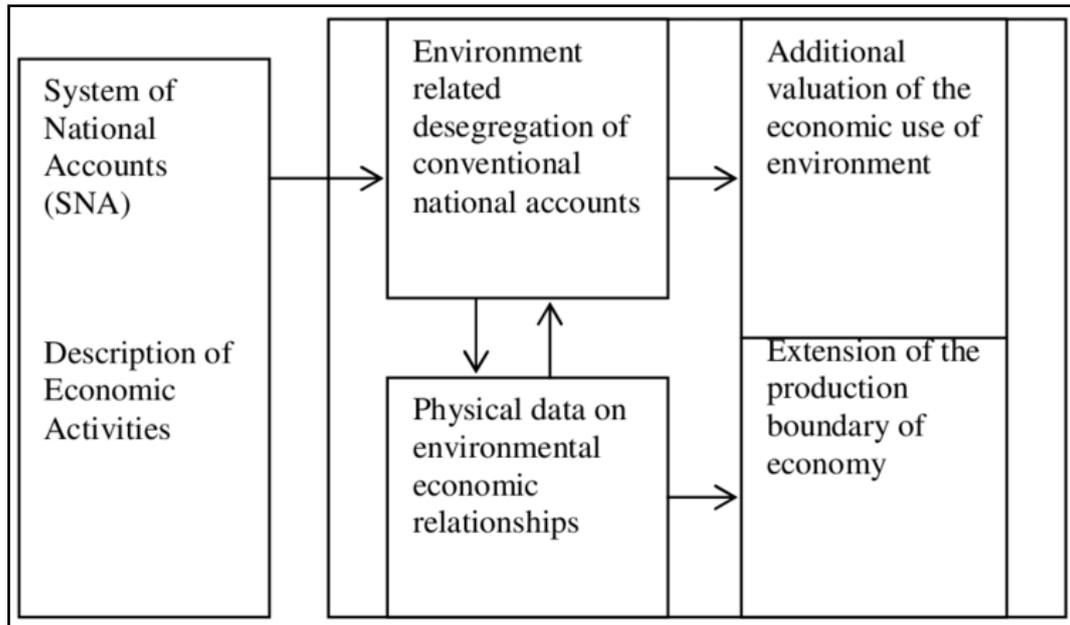
- **Improving soil health through integrated farming methods, rotation of crops, adoption of fertigation, precision farming methods, changing the ways in which the soil is irrigated and limiting the indiscriminate use of fertilizers** were important for **preventing soil degradation and thus reducing carbon footprint** in agriculture.

Need for Carbon-neutral farming:

- **Climate change mitigation:** Agriculture is one of the major contributors to greenhouse gas emissions, which are **the primary cause of climate change.**
- Carbon-neutral farming can help to mitigate these emissions by reducing the use of fossil fuels and sequestering carbon in the soil.
- **Soil health:** Carbon-neutral farming practices can improve soil health **by increasing the organic matter content in the soil.** This, in turn, improves soil structure, water-holding capacity, and nutrient availability.
- **Biodiversity:** Carbon-neutral farming practices can promote biodiversity **by providing habitat for wildlife and promoting the growth of native plant species.**
- **Food security:** Carbon-neutral farming practices can help to ensure food security by promoting sustainable agriculture and reducing the risk of crop failures due to climate change.
- **Economic benefits:** Carbon-neutral farming can provide economic benefits **by reducing input costs and increasing yields over the long term.** It can also create new income streams for farmers through carbon credit markets.

Topic 10. SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTING

Important for subject: Environment



System of Environmental-Economic Accounting:

System of Environmental-Economic Accounting (SEEA) framework has been **used to measure the links between environment, economic and societal well-being.**

- SEEA has two parts, the **central framework and ecosystem accounting**; the latter includes services provided by ecosystems, tracking changes in ecosystem assets and linking this to human activity.
- It contains the **internationally agreed standard** concepts, definitions, classifications, accounting rules and tables for producing internationally comparable statistics and accounts.
- The SEEA framework follows a **similar accounting structure as the System of National Accounts (SNA)**.
- The framework uses concepts, definitions and classifications consistent with the SNA in order to **facilitate the integration of environmental and economic statistics**.
- It is a **flexible system that can be adapted to countries' priorities and policy needs** while at the same time providing a common framework, concepts, terms and definitions.
- While these frameworks have been largely applied to land ecosystems, they are now

increasingly being applied to marine ecosystems through ocean accounting.

- In fact, the **Ministry of Statistics and Programme Implementation (MoSPI)** which has so far been focusing on land accounts, **has called for expanding the coverage of the accounts to include ocean accounts** in its strategy for the next half decade.

NCAVES (National Capital Accounting and Valuation of Ecosystem Services):

- NCAVES (National Capital Accounting and Valuation of Ecosystem Services) project is an important initiative **aimed at integrating natural capital and ecosystem services into national accounting frameworks.**
- The main objective of the NCAVES project is to **develop and implement a comprehensive framework for natural capital accounting and valuation of ecosystem services.** It seeks to enhance the understanding of the economic value of natural resources and ecosystem services and their contribution to the national economy.
- The NCAVES project is **implemented by the United Nations Statistics Division (UNSD)** in collaboration with various national governments. It **provides technical support, capacity building, and guidance to countries** in developing natural capital accounting systems and integrating them into their national statistical frameworks.
- The project **covers a wide range of ecosystem services**, including provisioning services (such as food, water, and timber), regulating services (such as climate regulation and water purification), and cultural services (such as recreation and cultural heritage).
- The NCAVES project promotes the **use of standardized methodologies and frameworks for natural capital accounting.** It emphasizes the measurement and valuation of ecosystem services, using both market-based and non-market-based approaches. The project provides guidance on data collection, classification, and accounting techniques to ensure consistency and comparability across countries.
- The NCAVES project is part of the broader global movement towards natural capital accounting and valuation of ecosystem services. It aligns with international initiatives, such as the System of Environmental-Economic Accounting (SEEA) and the United Nations' Sustainable Development Goals (SDGs).

Ocean Account:

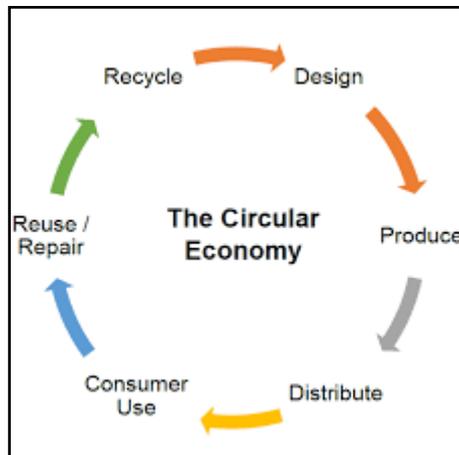
- Ocean accounts as “**integrated records of regularly compiled and comparable data concerning ocean environment assets** (e.g., extent/condition of mangroves), **economic activity** (e.g., sale of fish) and social conditions (e.g., coastal employment).”
- The objective of ocean accounts is to **provide a framework for capturing the economic value of marine resources and the services** they provide, as well as the associated environmental impacts.
- It aims to **promote sustainable management of oceans** by incorporating their economic and ecological dimensions into policy and decision-making.

Global Ocean Accounts Partnership:

- **Global Ocean Accounts Partnership (GOAP)** is an **international initiative** that aims to promote the implementation of ocean accounts worldwide. It brings together governments, international organizations, researchers, and other stakeholders to collaborate on the development and dissemination of ocean accounting methodologies and tools.
- The primary objective of GOAP is to support countries in **implementing the System of Environmental-Economic Accounting for the Oceans (SEEA-O)**, which is a framework for measuring and valuing the economic and environmental aspects of marine resources and activities.
- GOAP aims to build capacity, share knowledge and best practices, and facilitate the integration of ocean accounts into national statistical systems.
- GOAP is a partnership between multiple organizations, including the **United Nations Statistics Division (UNSD)**, the **United Nations Environment Programme (UNEP)**, the **Food and Agriculture Organization of the United Nations (FAO)**, and the **World Bank**.
- It helps countries improve **their understanding of the economic significance of marine resources, assess the environmental impacts of ocean-related activities, and make informed decisions for sustainable ocean management.**

Topic 11. EXTENDED PRODUCER RESPONSIBILITY IMPROVE CIRCULARITY IN INDIA'S WASTE OIL MANAGEMENT

Important for subject: Environment



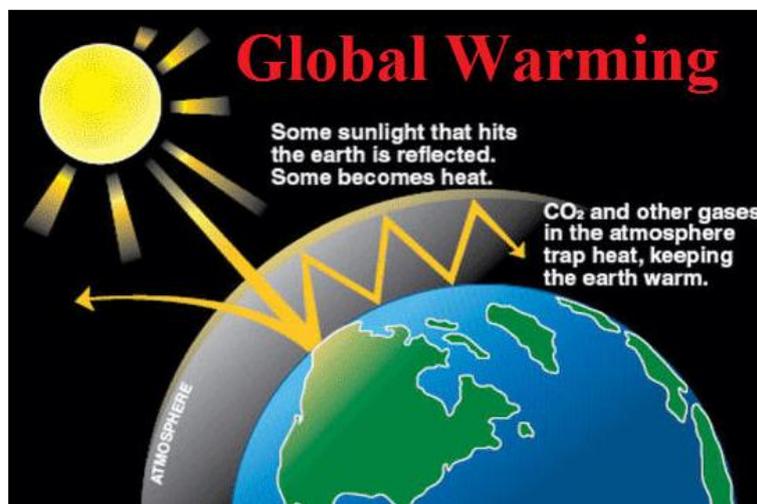
Union Budget 2023-24, presented by Finance Minister has placed emphasis on sustainable development and a circular economy in India.

- The **country has been pushing on the circularity of the resources** for the last two-three- years. The objective is to substitute natural resource consumption with equally valuable waste materials that otherwise would end up in landfills.
- Recently, the **Ministry of Environment, Forest and Climate Change (MoEFCC)** has introduced a draft notification on Extended Producer Responsibility (EPR) on waste oil. Used oil can act as a contaminant as it contains benzene, zinc, cadmium and other impurities that have the potential to pollute freshwater.
- **Draft notification on Extended Producer Responsibility (EPR) on waste oil** EPR is applicable to **producers and bulk generators** (like industry, railways, transport companies, power transmission companies, etc.), according to the draft notification.
- It recommends the **registration of stakeholders**, including producers, collection agents, recyclers and waste oil importers, on Central Pollution Control Board's (CPCB) online portal.
- The notification also talks about the **EPR targets of waste oil recycling for producers and the applicable obligations**, starting from 2024-25. The target for the base year is set as 10 per cent, which will **increase gradually by 10 per cent every year** till 2029. After this, the target will be set based on the quantity of lubrication oil sold or imported annually.

- A provision for **EPR certificate generation** and the computation of the quantity eligible for the EPR certificate is also given.
- The notification also **talks about an online portal** which CPCB will **set up for registration, filing of returns, EPR certificate generation** and tracing of oil produced or generated by any registered agency.
- MoEFCC has **provided clear demarcations** of the responsibilities of producers, waste oil importers, collection agents, recyclers, bulk generators, CPCB, State
- Pollution Control Boards (SPCB), states or Union Territories, municipalities, local self-governments etc.
- **Bureau of Indian Standards** is also entrusted with the important responsibility of **setting up necessary standards for re-refined oil**, which is used by producers of lubricants.
- **Environmental compensation** has been **included in the EPR along with prosecution** in case of any agency providing false information for obtaining EPR certificates. Also, the **prosecution for non-compliance** will be in addition to the environmental compensation.
- **CPCB is the designated agency** for verifying and auditing the agencies under the EPR notification.
- A **steering committee** is proposed under the EPR to **assess the draft notification's implementation, monitoring and overall supervision.**

Topic 12. GLOBAL WARMING

Important for subject: Environment



The **annual mean temperature** of the world is known to **have increased by 1.1 degree Celsius** from the average of the 1850-1900 period. But this increase, as can be expected, is **not uniform**.

- It **varies in different regions** and also at **different times** of the year. This single number denoting global temperature increase, very effective for communicating the dangers of climate change, is built on top of several layers of averages.
- **Temperature rise over land is much higher than over oceans. Over land**, the annual mean temperatures have **risen by as much as 1.59 degree Celsius** since preindustrial times, according to the latest report of the Intergovernmental Panel on Climate Change.

Oceans, in contrast, have warmed by about 0.88 degree Celsius.

- An **assessment of climate change over the Indian subcontinent**, published by the Ministry of Earth Sciences in 2020, said **annual mean temperatures had risen by 0.7 degree Celsius** from 1900.
- This is significantly lower than the 1.59 degree Celsius rise for land temperatures across the world. It could give the impression that the problem of climate change over India was not as acute as other parts of the world.

Factors affecting mean temperature:

- **Altitude:** The increase in temperatures is known to be more prominent in the higher altitudes, near the Polar Regions, than near the equator.
- The IPCC report says the **Arctic region has warmed at least twice** as much as the world average. Its current annual mean temperatures are about 2 degrees Celsius higher than pre-industrial times.
- **Albedo effect: Ice traps the least amount of heat and reflects most of the solar radiation** when compared with land or water. The **ice cover in the Arctic is melting**, because of which more land or water is getting exposed to the Sun.
- **Aerosols:** Aerosols refer to all kinds of **particles suspended in the atmosphere**.
- These particles have **the potential to affect the local temperature** in multiple ways. **Many of these scatter sunlight back**, so that **lesser heat is absorbed** by the land. Aerosols also **affect cloud formation**. Clouds, in turn, have an **impact on how much**

sunlight is reflected or absorbed.

- **Higher warming over land than oceans:** Land areas have a tendency to get heated faster, and by a larger amount, than oceans.
- Daily and seasonal variations in heating over land and oceans are usually explained in terms of their different heat capacities.
- **Oceans have a higher capacity to cool** themselves down through the process of evaporation. The warmer water evaporates, leaving the rest of the ocean relatively cooler.
- **Tropical location key:** A majority of the global landmass is concentrated in the northern latitude. In the tropics and along the equator, it is mostly oceans.
- Land areas are also prone to faster and greater heating.

Why is warming over India lower?

- A major part of India's relatively lesser warming can be attributed to its location in the lower latitudes. India, located in the tropics, the deviation in temperature rise from the global average is not surprising.
- **Aerosol concentration over the Indian region is quite high**, due to natural as well as man-made reasons. Due to its location in the tropics and the arid climate,
- India is no stranger to dust. But it also happens to be experiencing heavy pollution right now. Emissions from vehicles, industries, construction, and other activities add a lot of aerosols in the Indian region. A reduction in warming could be an unintended but positive side-effect.

Topic 13. OUTBREAK OF MOROCCAN LOCUSTS

Important for subject: Environment

Outbreak of Moroccan locusts will destroy 25% of annual wheat production in Afghanistan:
FAO

- The 'large-scale' outbreak of the Moroccan locust across eight provinces in Afghanistan's wheat basket is likely to destroy 700,000-1.2 million tonnes of wheat or a quarter of the total annual harvest, alerted the Food and Agriculture Organization (FAO).
- This translates to \$280 million-\$480 million in economic losses— as of today's

prices in the country, stated FAO.

- Under such circumstances, if the Moroccan locust population is **left untreated**, its **population can increase 100 times** in the next year, the FAO said. This will **create even bigger problems for agriculture and food security for Afghanistan** and that of its neighbours Tajikistan, Uzbekistan and Turkmenistan.
- In Afghanistan, **more than 6.1 million people are on the brink of famine-like** conditions which puts the country in Phase 4 (emergency) of the Integrated Food Security Phase Classification, according to the preliminary projections for November 2022-March 2023.
- It is among the countries with the **highest prevalence of insufficient food consumption**. Hunger is primarily driven by the economic crisis that has gripped
- Afghanistan since August 2021, compounded by decades of conflict and climate shocks, according to 2023 Global report on food crisis

Reason for Outbreak:

- Locust populations **usually go up when temperatures are above average and rainfall below normal**. The **geographical spread** of the Moroccan locust is **normal when spring rainfall** (from March to May) is **about 100 millimetres**.
- But **spring rainfall below 100 mm** for the second or third consecutive year usually **leads to an increase in the population of Moroccan locusts**.
- Afghanistan has entered into the third consecutive year of drought, creating the ideal environment for locusts to hatch and swarm.
- There has been a **shortage of chemical supplies** across the country. As a result of this, the traditional ‘mechanical control’ methods were used to control the outbreak. **Chemical locust control methods are far more effective than mechanical control**.
- So, effective ways to control the outbreaks is urgent funding to support both mechanical and chemical control measures, alongside on-the ground surveys to monitor and map locust hatching sites, stated the FAO.

Topic 14. THE RETURN OF WILD BOARS IN KASHMIR THREATENS THE HANGUL HABITAT AND CROPS

Important for subject: Environment

Wild boars resurfaced in Kashmir after 30 years in 2013 and their number has been growing ever since, causing concern among the local residents and wildlife experts.

- Sightings of the fast-breeding wild boar have been increasing in Kashmir, note citizens, farmers and wildlife conservationists. The **species is not native to the region** and was declared locally extinct in the 1980s until a sighting was recorded in 2013.
- The boars are increasing the competition for resources, for the **critically endangered hanguls in Dachigam National Park**. Farmers also allege that the wild boars are damaging farmlands by uprooting their crops.
- Wildlife experts say **that increasing temperatures may have led to the resurgence of wild boars in the region**. The Department of Wildlife Protection is conducting a detailed study to understand more about the presence of wild boars in Kashmir.

Dachigam National Park

- Dachigam National Park is a **prominent wildlife sanctuary and national park** located in the **state of Jammu and Kashmir**.
- Dachigam National Park is **situated in the western Himalayas**, near the city of Srinagar in Jammu and Kashmir. It covers an area of approximately 141 square kilometers.
- The park was initially established in 1910 as a game reserve to protect the Kashmir stag (Hangul). It was later **upgraded to a national park in 1981**.
- Dachigam National Park is known for its **rich biodiversity** and is home to a variety of flora and fauna. It is particularly famous for its population of the **critically endangered Kashmir stag (Hangul)**, which is the state animal of Jammu and Kashmir. Other wildlife species found in the park include **Himalayan black bear**,
- **Himalayan brown bear, musk deer, leopard, red fox, Himalayan weasel, and numerous bird species**.
- The park is a haven for bird enthusiasts, with a wide variety of avian species found in

its forests. It is home to several endemic and migratory bird species, including the **Himalayan monal, koklass pheasant, black bulbul, Kashmir flycatcher, and white-capped redstart.**

- The park encompasses **diverse vegetation, ranging from coniferous forests to alpine meadows.** The lower areas of the park are covered with dense forests of deodar, pine, and fir trees, while the higher regions feature alpine grasslands.
- Like many other protected areas, Dachigam National Park faces various challenges, including **habitat degradation, encroachment, and poaching.** Conservation efforts are being undertaken to mitigate these threats, including habitat restoration, community participation, and strict anti-poaching measures.

Hangul:

- Hangul, also known as the **Kashmir stag**, is a species of deer **native to the state of Jammu and Kashmir in India.**
- **Scientific Name:** Hangul is scientifically known as *Cervus hanglu*.
- Hangul primarily **inhabits the dense temperate forests** of the Kashmir Valley and its surrounding areas. It is **found at elevations ranging from 1,700 meters to 3,000 meters** above sea level.
- Hangul is a **medium-sized deer** with a distinct appearance. Adult males, known as stags, **have a majestic set of antlers** that can grow up to 11 tines or branches.
- Their coat is reddish-brown in summer and turns dark brown in winter. Females, known as hinds, have a lighter coat and lack antlers.
- The **hangul is a critically-endangered** species as per the International Union for Conservation of Nature and Natural Resources (IUCN) Red List, and a **Schedule I Species in as per India's Wildlife Protection Act 1972.**
- The population has **experienced a significant decline over the years due to various factors, including habitat loss, poaching, and human-wildlife conflict.**
- **Conservation Efforts:** Various conservation initiatives have been undertaken to protect and conserve the Hangul population. These efforts include **habitat restoration, anti-poaching measures, community participation, and research and monitoring programs.** The **Hangul Conservation Breeding Program at the Dachigam National Park** is one such initiative aimed at breeding and reintroducing

captive-bred individuals into the wild.

- Hangul holds significant ecological and cultural value. It plays a crucial role in maintaining the biodiversity of its habitat and contributes to the ecological balance of the region. It is **also considered a flagship species for conservation** efforts in the Kashmir Valley.

Wild boar

- Wild boar, scientifically known as *Sus scrofa*, is a species of large, wild pig that is native to Eurasia, North Africa, and parts of the Indian subcontinent.
- Wild boars are **adaptable** and can be **found in various habitats, including forests, woodlands, grasslands, and wetlands**. They are known for their **ability to thrive in different environments**, from dense forests to open fields.
- Wild boars have a **wide geographic distribution** and are found across Europe, Asia, and North Africa. They have also been introduced to other parts of the world, including the Americas and Australia, where they have established feral populations.
- Wild boars are **primarily active during the night** (nocturnal) or twilight hours (crepuscular). They are **omnivorous** and have a **varied diet that includes roots, tubers, fruits, nuts, insects, small vertebrates, and carrion**. They are known for their strong sense of smell and excellent hearing.
- Wild boars are known for their prolific breeding capabilities. **Breeding occurs throughout the year**, although there is typically a peak during certain seasons.
- Wild boars play an important **ecological role as seed dispersers and soil cultivators**. They help in the dispersal of plant seeds through their feeding and movement patterns. However, their foraging activities can also cause damage to agricultural crops and natural habitats.
- **Human-Wildlife Conflict:** In some regions, wild boars can come into conflict with human activities, especially agriculture. Their **foraging habits and rooting behavior** can cause damage to crops, resulting in economic losses for farmers.
- They can also **pose a threat to human safety** in certain situations.
- **Disease Concerns:** Wild boars can be carriers of certain diseases, as African swine fever and bovine tuberculosis, which pose risks to livestock and domestic animals. Disease surveillance and control measures are important for managing these risks.

Topic 15. UNFF18: SUSTAINABLE FOREST MANAGEMENT TAKES CENTRE STAGE

Important for subject: Environment

Discussions on integrated policies on sustainable forest management (SFM) and energy to meet the United Nations-mandated Sustainable Development Goals (SDG) took centre stage on the fourth day of the United Nations Forum on Forests (UNFF18).

- The delegates at the eighteenth session of UNFF18 in New York, discussed the contributions of SFM to energy, livelihoods and the SDGs.
- Executive director of the **International Tropical Timber Organization, emphasised its mandate to practice SFM in tropical regions.**
- **Saudi Arabia stressed on the need to prevent forest fires and urban expansion** that encroaches on forests.
- **Forests have the potential for reducing five gigatonnes of emissions**, Mirey Atallah, head of UNEP's Nature for Climate branch, said, **citing the findings of the Emissions Gap Report.**

Sustainable forest management (SFM):

- **Definition:** Sustainable forest management (SFM) is defined as a “dynamic and evolving concept, which aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations.”
- Sustainable forest management **emphasizes the concept of stewardship**, which **involves the responsible use and conservation of forest resources**. It involves practices such as selective logging, reforestation, and conservation of biodiversity to ensure the long-term sustainability of forests.
- Sustainable forest management **recognizes that forests provide a wide range of benefits**, including **timber and non-timber forest products**, carbon sequestration, water regulation, biodiversity conservation, and recreational opportunities. It seeks to balance these benefits for the benefit of present and future generations.
- Sustainable forest management **promotes the involvement of local communities, indigenous peoples, and other stakeholders in decision-making processes**. It

recognizes their traditional knowledge and rights over forest resources and ensures their active participation in forest management.

- Forest certification systems, such as the Forest Stewardship Council (FSC) and the program for the Endorsement of Forest Certification (PEFC), play a crucial role in promoting sustainable forest management.
- These systems **provide standards and guidelines for responsible forest management** and help consumers identify sustainably sourced wood and forest products.
- Sustainable forest management **aims to protect and enhance biodiversity in forests**. It involves measures such as maintaining natural habitats, protecting endangered species, and implementing conservation strategies to preserve the ecological balance and prevent species loss.
- Forests **provide various ecosystem services**, such as carbon storage, water regulation, soil conservation, and climate regulation. Sustainable forest management recognizes the importance of these services and seeks to maintain or enhance them through appropriate management practices.
- **Monitoring and assessment of forest resources** and management practices are essential components of sustainable forest management.
- **Regular monitoring helps evaluate the effectiveness of management strategies**, identify potential issues, and make informed decisions for adaptive management.
- Sustainable forest management is promoted **globally through initiatives** such as the **United Nations Framework Convention on Climate Change (UNFCCC)**, **United Nations Forum on Forests (UNFF)**, and various regional and national forest policies and programs.

United Nations Forum on Forests (UNFF):

- United Nations Forum on Forests (UNFF) is a **global platform for policy dialogue, coordination, and cooperation** on forest-related issues.
- The UNFF **was established in 2000** by the **United Nations Economic and Social Council (ECOSOC)** as a subsidiary body to **promote sustainable forest management** and the conservation and sustainable development of all types of forests.
- The **main mandate** of the UNFF is to **facilitate the implementation of sustainable**

forest management and the achievement of internationally agreed forest-related goals, including the United Nations Strategic Plan for Forests (UNSPF).

- The UNFF operates through an intergovernmental process, **with participation from member states, international organizations, civil society, and other stakeholders.** It provides a platform for dialogue, information sharing, and collaboration on forest-related issues.
- The UNFF **holds regular sessions and meetings to review progress,** share experiences, and discuss policy options related to sustainable forest management.
- The sessions provide an opportunity for member states to negotiate and adopt decisions and resolutions on forest-related
- The UNFF **works towards the achievement of global forest goals,** including those outlined in the UNSPF. These goals include **halting deforestation, promoting sustainable forest management, increasing forest area, and enhancing forest-related economic, social, and environmental benefits.**
- On 27 April 2017, the UN General Assembly **adopted the first ever UN Strategic Plan for Forests 2017-2030.** The Strategic Plan provides a **global framework for actions** at all levels to **sustainably manage all types of forests and trees outside forests** and halt deforestation and forest degradation.
- At the heart of the Strategic Plan are six Global Forest Goals and 26 associated targets to be achieved by 2030, which are voluntary and universal.

Topic 16. STUDIES ON MIGRATION PATTERNS OF MILKWEED BUTTERFLIES

Important for subject: Environment

Studies on migration patterns of milkweed butterflies and their feeding habits can help protect them, say researchers

More on the Research Findings:

- Millions of Milkweed butterflies **undertake a migration** between the Eastern and Western Ghats in southern India, **seeking refuge from the harsh summer.**
- This spectacular ecological phenomenon **had been recorded more than a century ago** but received little research and conservation attention until recently.
- However, a **recent study by a team of researchers shed light on the migration patterns** of Milkweed butterflies in southern India, which has the **potential to**

contribute to the conservation of these butterflies and their migration in the face of ongoing changes in land use, habitat degradation, and climate warming.

- The study was published in the recent issue of the *Journal of Insect Conservation*.
- **After southwest monsoon**, Milkweed butterflies migrate westward from the Eastern Ghats and plains to the Western Ghats, **becoming active for more than two months** upon their arrival.
- Between October and April, most of the Milkweed butterflies in the Western Ghats congregate in large numbers at specific sites during winter and dry seasons. **When the summer rain cools southern India**, the **butterflies migrate eastwards** into the Eastern Ghats and the plains.
- The studies reveal that the **wings of the majority of butterflies during their eastward journey are battered than that in the westward migration**.
- Also, the researchers found that the **dominant species involved in the migration, Dark blue tiger and Double-branded crow**, are not found breeding in the mid and high-altitude evergreen and semi-evergreen forests of the Western Ghats.
- The **migration** of Milkweed butterflies also **plays a vital ecological role** during the migration. **As pollinators**, their movements can **impact entire ecosy**
- Their **migration is threatened by habitat destruction and climate change**. **Studying their migration patterns and feeding habits can impart the interconnectedness** of plant and animal life. By unravelling the mysteries of their migration, can help protect these beautiful creatures and the ecosystems they inhabit.

Milkweed Butterflies:

- They are any of a **group of butterflies** in the **brush-footed** butterfly family (Nymphalidae).
- There are some **300 species in the group**, including the iconic Monarch butterfly.
- Distribution:
- The majority of species are **found in both Old and New World tropics** (Old World refers to Europe, Africa, and Asia, while New World refers to North America, South America, and the Caribbean). However, **some** well-known members of the group, such as the monarch butterfly and the queen butterfly, live in **temperate regions**.

Features:

- The **large, colourful adults have long, usually brownish or orange wings** marked by black-and-white patterns.
- They **fly slowly**, and some, such as the monarch butterfly, migrate great distances.
- They **feed chiefly on milkweed** and sometimes on nightshade.
- These **plants contain acrid, milky juices that probably make the larva and its subsequent stages distasteful to predators**. This, combined with a conspicuous colouration, protects them.

Topic 17. INDIAN PRISONER DIES IN PAKISTAN A WEEK BEFORE REPATRIATION

Important for subject: International Relations

An Indian prisoner, who was to be repatriated next week, died in a hospital in Karachi, civil society activists revealed on Sunday.

- The deceased, Zulfiqar, was expected to enter India along with 199 fishermen set to be released by Pakistan.

Agreement on Consular Access

- In 2008, India and Pakistan signed the Agreement on Consular Access.
- **Section 4 of the agreement** states that the governments of both nations would provide consular access. This has to be provided within three months to citizens of another country, under arrest, detention, or imprisonment in the other country.
- **8/9 Section 5 of the agreement** provides that **within one month of confirmation of the national status and completion of sentences both governments should release and return people**.

Vienna Convention on Consular Relations of 1963.

- The Vienna Convention on Consular Relations is an **international treaty that defines consular relations between independent states**.
- A consul, (who is not a diplomat) is a representative of a foreign state in a host country, who works for the interests of his countrymen.

- **Article 36 of the Vienna Convention** states that foreign nationals who are arrested or detained in the host country must be given notice without delay of their right to have their embassy or consulate notified of that arrest.
- If the detained foreign national so requests, the police must fax that notice to the embassy or consulate, which can then verify the person.
- The notice to the consulate can be as simple as a fax, giving the person's name, the place of arrest, and, if possible, something about the reason for the arrest or detention

Topic 18. ARAB LEAGUE

Important for subject: International Relations



The Arab League voted to reinstate Syria's membership after its suspension more than **10 years ago**, underlining the thawing relations between Damascus and other Arab countries.

- Syria was ousted from the Arab League in 2011 following President Bashar alAssad's brutal crackdown on pro-democracy protests, which led to the ongoing civil war in the country.
- The conflict has since killed around half of a million people and displaced about 23 million.
- The ruling, which allows Assad to attend the upcoming Arab League Summit in Saudi Arabia on May 19, has also called for a resolution of the civil war and the resulting refugee and drug smuggling crises.

Causal factors for reinstatement

- The Arab League's decision is the culmination of Assad's diplomatic efforts to return

to the fold, which gained momentum after this February's massive earthquake in Turkey and Syria.

- Assad has received a favourable response from several Arab nations like Egypt and Oman not just because they wanted to help the earthquake victims.
- Experts believe these countries have realised they need to end Damascus' isolation for the stability of West Asia.
- Moreover, they want some sort of repatriation of refugees back into Syria and a **curb on the trade of captagon, a highly addictive amphetamine produced in the country.**
- The international community outside of the region – Russia aside – has largely washed its hands of responsibility for Syria. There is a vacuum and this is where the regional powers have come in.
- Another catalyst in Syria's rehabilitation is the China-brokered re-establishment of diplomatic relations between regional powerhouse Saudi Arabia and its arch enemy, Iran.

About the Arab League

- Formally the League of Arab States, it is a regional organization in the Arab world, which is located in **Northern Africa, Western Africa, Eastern Africa, and Western Asia.**
- The **Arab League was formed in Cairo on 22 March 1945, initially with six members: Egypt, Iraq, Transjordan, Lebanon, Saudi Arabia, and Syria.**
- The official headquarters of the League was the **Boustan Palace in Cairo.**
- A common market was established in 1965.

Membership

- Currently, the League has 22 members.
- The Charter of the Arab League, also known as the Pact of the League of Arab States, is the founding treaty of the Arab League. Adopted in 1945, it stipulates that “the League of Arab States shall be composed of the independent Arab States that have signed this Pact.”
- **22 member states:** Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait,

Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates and Yemen. (**Iran – NOT a Member**) **5 observer states**: Armenia, Brazil, Eritrea, **India** and Venezuela.

Topic 19. TITLE 42

Important for subject: International Relations

The COVID restrictions, known as **Title 42**, will expire at the **US-Mexico border**; it was initially enacted by the former President of the United States **Donald Trump** in **March 2020**.

Details of Title 42 Law

- “Title 42” is a **public health order that was invoked by the Trump administration in March 2020 to expel most migrants caught at the U.S.-Mexico border** without allowing them to seek asylum.
- The order was based on the premise that migrants posed a risk of spreading COVID-19 in detention facilities and communities. However, many critics argued that Title 42 was a pretext to restrict immigration and violate human rights.
- Recently, **the USA President announced lifting Title 42**. This means that migrants who cross the border will be able to request asylum, a legal right under U.S. and international law.
- The administration expects a surge in border crossings, as many migrants have been waiting in Mexico or other countries for a chance to enter the U.S.

Significance

- The **end of Title 42 marks a significant shift in U.S. border policy, with humanitarian and political implications**.
- On one hand, it **restores the right to seek asylum** for thousands of people fleeing violence, persecution and poverty in their home countries.
- On the other hand, it poses **a challenge for the administration to manage the influx of migrants**, while balancing public health concerns, human rights obligations and public opinion.

Topic 20. PERSONA NON GRATA

Important for subject: International Relations

A day after Canada announced it would expel a Chinese diplomat over allegations of involvement in a campaign to intimidate a Canadian politician, China on Tuesday (May 9) declared a Canadian diplomat in Shanghai as **persona non grata**.

Persona non grata

- In literal terms, the phrase is Latin for “an unwelcome person.”
- The term in a diplomatic sense **refers to a foreign person whose entering or remaining in a certain country is prohibited by that country.**
- The designation received **diplomatic meaning at the 1961 Vienna Convention for Diplomatic Relations.**
- Under **Article 9 of the treaty, a country can declare any member of a diplomatic staff persona non grata** “at any time and without having to explain its decision.”
- The persona non grata declaration is the **most damning form of censure a country can bestow on foreign diplomats considering they are protected from arrests and other forms of prosecution under diplomatic immunity.**
- A person declared as such can be recalled from a diplomatic mission or have **their functions with the mission terminated.** If the declared person is not recalled, the country can refuse to recognize the person as part of the mission.
- **Persona non grata can also apply to people who have yet to enter a country.**

Topic 21. WTO IT AGREEMENT

Important for subject: International Relations

The WTO’s IT Agreement has done little for India’s IT services. India’s hardware sector was hit instead.

Information Technology Agreement

- India is a **signatory to the Information Technology Agreement (ITA)** (now also known as **ITA-1**), a **plurilateral agreement of WTO**. As on date, there are **altogether 75 member signatories, including 27 EU member countries**, accounting for about 97 percent of the world trade in Information Technology (IT) products.

- India joined the ITA on 25th March 1997.
- During the last year, some of the **developed country members of the ITA – USA, European Union and Japan-** have again proposed in the ITA Committee meetings to **broaden the scope and coverage of the ITA** (it is being referred as **ITA-2**).
- These proposals basically relate to **increasing the coverage of IT products on which customs duty would be bound at zero; addressing non-tariff measures; and expanding the number of signatory countries to include new signatories such as Argentina, Brazil and South Africa.**
- Proponents of ITA expansion have prepared a **consolidated list containing IT products** (combining products of interest of all proponents of ITA 2), **on which tariff reductions are being sought has been prepared and circulated amongst WTO members.** Same is under active discussions in the WTO these days.

India's Experience

- **India's experience with the ITA has been most discouraging**, which almost wiped out **the IT industry from India.** The real gainer from that agreement has been China which raised its global market share from 2% to 14% between 2000- 2011.
- In light of recent measures taken by the Government to build a sound manufacturing environment in the field of Electronics and Information Technology, this is the time for us to incubate our industry rather than expose it to undue pressures of competition.
- Accordingly, and also keeping in view opinion of domestic IT industry, it has been decided not to participate in the ITA expansion negotiations for the time being.

Topic 22. SAHEL REGION

Important for subject: International Relations

The ongoing fighting in Sudan is forcing thousands to flee. The humanitarian emergency is spreading, creating a dangerous security situation in **the Sahel region.**

About Sahel Region

- The Sahel is the **ecoclimatic and biogeographic realm of transition in Africa between the Sahara to the north and the Sudanian savanna to the south.**
- Having a semi-arid climate, it stretches across the south-central latitudes of Northern

Africa between the Atlantic Ocean and the Red Sea.

- The Sahel part of Africa includes **from west to east** parts of northern Senegal, southern Mauritania, central Mali, northern Burkina Faso, the extreme south of Algeria, Niger, the extreme north of Nigeria, the extreme north of Cameroon and Central African Republic, central Chad, central and southern Sudan, the extreme north of South Sudan, Eritrea, and the extreme north of Ethiopia.

Topic 23. WHO DECLARES MPOX IS NO LONGER PUBLIC HEALTH EMERGENCY OF GLOBAL CONCERN

Important for subject: International Relations

The director-general of the World Health Organization (WHO), Tedros Adhanom Ghebreyesus, declared that mpox was no longer a Public Health Emergency of International Concern (PHEIC) on May 11, 2023.

- The announcement came a day after the fifth meeting of the International Health Regulations (2005) (IHR) Emergency Committee.
- Emergency Committee acknowledged the progress made in the global response to the multi-country outbreak of mpox and the further decline in the number of reported cases since the last meeting
- The panel also stressed the integration of mpox prevention, preparedness and response within national surveillance and control programmes, including for HIV and other sexually transmissible infections, as an important element of this longerterm transition.

International Health Regulations

About:

- While disease outbreaks and other acute public health risks are often unpredictable and require a range of responses, the International Health Regulations (2005) (IHR) **provide an overarching legal framework that defines countries' rights and obligations in handling public health events** and emergencies that have the potential to cross borders.
- The IHR are an **instrument of international law that is legally-binding on 196 countries**, including the 194 WHO Member States. **The IHR grew out of the response to deadly epidemics that once overran Europe.**

- They **create rights and obligations for countries**, including the requirement to report public health events. The Regulations also **outline the criteria to determine whether or not a particular event constitutes a “public health emergency of international concern”**.
- At the same time, the IHR **require countries to designate a National IHR Focal Point for communications with WHO** to establish and maintain core capacities for surveillance and response, including at designated points of entry.
- Additional provisions address the areas of international travel and transport such as the health documents required for international traffic.
- Finally, the **IHR introduce important safeguards to protect the rights of travellers and other persons in relation to the treatment of personal data, informed consent and non-discrimination** in the application of health measures under the Regulations.

Implementation:

- The **responsibility** for implementing the IHR **rests upon all States Parties** that are bound by the Regulations and on WHO. Governments are responsible, including all of their sectors, ministries, levels, officials and personnel for implementing IHR at the national level.
- **WHO plays the coordinating role in IHR implementation** and, together with its partners, helps countries to build capacities.

The IHR require that all countries have the ability to do the following:

- **Detect:** Make sure surveillance systems can detect acute public health events in timely matter
- **Assess and report:** Use the decision instrument in Annex 2 of the IHR to **assess public health event and report to WHO through their National IHR**
- **Focal Point** those that may constitute a public health emergency of international concern
- **Respond:** Respond to public health risks and emergencies
- **The goal of country implementation is to limit the spread of health risks to neighbouring countries and to prevent unwarranted travel and trade restrictions.**
- **Preparedness:** WHO’s support **focuses on the priority needs identified by the**

WHO Regional and Country Offices, in order to help each country meet its IHR commitment. This includes: **designating WHO IHR Contact Points** at the headquarters or the regional level; **conducting global public health surveillance and assessment** of significant public health events; **disseminating public health information** to Member States; **offering technical assistance** to Member States; **supporting Member States in their efforts to assess their existing national public health structures and capacities** for surveillance and response, including at designated points of entry; **monitoring the implementation of IHR (2005)** and updating guidelines; and if required, determining whether or not a particular event constitutes a public health emergency of international concern (PHEIC), with advice from external experts.

- If a PHEIC is declared, **WHO develops and recommends the critical health measures for implementation by Member States** during such an emergency.

Monkeypox

- Monkeypox was **first reported in 1958** in laboratory monkeys and the first human case was reported in 1970 in a nine month old baby in the Democratic Republic of Congo.
- **Nigeria reported its first case of monkeypox in humans in 1970** when one case was detected; there were two human cases of monkeypox in Nigeria in 1978.
- And after nearly four decades of not reporting any cases, monkeypox (West African clade) made a re-emergence in Nigeria in September 2017 with a total of 558 cases reported till now.
- In November last year, the **disease's name was changed by WHO from 'monkeypox' to 'mpox' to reduce racial and sexual stigma** surrounding it.

Spread:

- Based on epidemiological and clinical characteristics of 122 confirmed or probable cases of human monkeypox cases in Nigeria, researchers found both primary zoonotic and human to human transmission.
- Like all diseases that are **endemic only to Africa**, while efforts were made to prevent an outbreak in the non-endemic countries outside Africa, no serious international attempts were made to stop the outbreak in Nigeria nor study the virus characteristics.

- The current outbreak in Europe and North America is the first instance when large scale human to human transmission has been reported outside Africa.
- There are no clear answers to how humans are infected as the host animal that behaves as a reservoir for the virus has not been identified in the wild. **And how the virus spreads from animals to humans is not known.**
- The current outbreak appears to have spread primarily among men who have sex with men.
- The virus is not transmitted through semen or vaginal fluids but the skin to skin contact during sex can result in virus spread.

Low mutation rate

- Till date over 15 monkeypox genomes have been sequenced. But the monkeypox virus has a lower mutation rate (about two mutations a year) compared to nearly 25 mutations in a year in the case of SARS CoV2 virus.
- This is because monkeypox is a DNA virus unlike the SARSCoV2, **which is an RNA virus.**
- It is yet unclear if the virus has acquired the ability of sustained transmission among humans.

Topic 24. JUSTICE BALAKRISHNAN COMMISSION

Important for subject: Polity

Former Chief Justice of India K. **Balakrishnan**, who heads the **Inquiry Commission into whether Dalit converts to religions other than Sikhism or Buddhism should get Scheduled Caste status**, said his panel could deliver its report in a year, and that too before the election year of 2024.

- The Union Government has appointed a **three-member commission, headed by former Chief Justice of India K G Balakrishnan**, to consider the possibility of granting SC status to “new persons who have historically belonged to the Scheduled Castes” but have converted to religions other than Hinduism, Buddhism and Sikhism.

Need Of The Commission:

- The new commission has been set up at a time when the Supreme Court is hearing a

PIL filed by the **National Council of Dalit Christians (NCDC)**, which has been **fighting for SC status since 2020** — there have been numerous other cases filed in the apex court on the matter since 2004. In August, the Supreme Court had directed the Centre to submit its current position on the issue.

- The **contention of Dalit Christian and Muslim organisations has been that these communities continue to face discrimination** but, these organizations criticised the latest move by the Centre as a “delaying tactic”.
- The commission will also examine the implications of any decision in this matter on existing SCs, and the changes they go through on converting to other religions in terms of customs, traditions, social and other discrimination, and deprivation.

Constitution Order of 1950

- When enacted, the Constitution (Scheduled Castes) Order of 1950, initially provided for recognizing only Hindus as SCs, to address the social disability arising out of the practice of untouchability.
- The **Order was amended in 1956 to include Dalits who had converted to Sikhism and once more in 1990 to include Dalits who had converted to Buddhism.**
- Both amendments were aided by the reports of the **Kaka Kalelkar Commission in 1955 and the High-Powered Panel (HPP) on Minorities, Scheduled Castes, and Scheduled Tribes in 1983 respectively.**
- The 1950 Order (post amendments in 1956 and 1990), **mandates that anybody who is not a Hindu, Sikh or Buddhist cannot be granted SC status.**

Ranganath Report 2007

- The recommendation of Scheduled Caste reservation for Dalit converts to Christianity and Islam was made in the 2007 report of the **Justice Ranganath Mishra Commission for Religious and Linguistic Minorities.**
- Dalit Christians and Muslims face discrimination not only from upper-caste members of their own religion but also from the broader Hindu-dominated society.
- The exclusion of Dalit converts to Christianity and Islam from the SC category violates the constitutional guarantee of equality and is against the basic tenets of these religions, which reject caste discrimination.
- The denial of SC status to Dalit converts to Christianity and Islam has led to their

socio-economic and educational backwardness and has deprived them of access to reservations in education and employment opportunities (as provided under article 16).

Centre Stand:

- The **Centre had discredited the report**, but the apex court believes it contains valuable information that could help determine if excluding Dalit converts from the SC category is unconstitutional according to the Constitution Order of 1950.

Topic 25. HC DON'T HAVE POWERS TO DIRECT CHANGES TO ST LIST : CJI

Important for subject: Polity

The Chief Justice of India questioned why a 23-year-old Constitution Bench decision that clearly stated that no court or state has the authority to “add, subtract, or modify” the Scheduled Tribes List was not “shown” to the Manipur High Court.

- The Chief Justice stated that a **High Court does not have the authority to make amendments to the Scheduled Tribes List. Designating a Scheduled Caste or Scheduled Tribe is a Presidential authority.**
- The Constitution Bench in State of Maharashtra v/s Milind (2000) concluded that State governments, courts, tribunals, or any other body have no authority to modify, amend, or alter the list of Scheduled Tribes (STs).
- In a recent case, the **Manipur High Court declared that a community called Meitei/Meetei, which is not included in the STs list, should be considered a Scheduled Tribe.**
- **The court also directed the state government to initiate the process of inclusion of this community in the list.**
- The protest against the order of the High Court resulted in the violence and death of more than 60 people.
- The Manipur High Court decision was challenged in the **Supreme Court, which stayed the order of the High Court.**

The Supreme Court Observation

- The **Supreme Court also observed that the Manipur High Court had overlooked a landmark judgment of a five-judge Constitution Bench in 1997, which clearly**

stated that no court or state has the authority to “add, subtract, or modify” the Scheduled Tribes List.

- The Chief Justice of India, who was heading the bench hearing the case, **questioned why this judgment was not “shown” to the Manipur High Court.**
- Chief Justice remarked that such judicial interference in matters of policy and legislation would create chaos and confusion.

Scheduled Tribes List

- It is a **constitutional document that recognizes the rights and privileges of certain communities in India** that are considered to be historically disadvantaged and marginalized.
- **The list is not static but can be amended by the Parliament of India under Article 342 of the Constitution.**

Process of adding to the ST List:

- **The process of adding tribes to the ST list starts with a recommendation from the State governments.**
- **It is sent to the Tribal Affairs Ministry, which reviews and sends them to the Registrar General of India, Under the Home Ministry for approval.**
- **After approval, it is sent to the National Commission for Scheduled Tribes and then sent to the Cabinet for a final decision.**
- **Once the cabinet finalizes it, then it introduces a bill in the parliament to amend the Constitution (Scheduled Castes) Order, 1950, and the Constitution (Scheduled Tribes) Order, 1950.**
- **After the amendment bill is passed by both the Lok Sabha and Rajya Sabha, the President’s office takes the final decision under Articles 341 and 342 of the Constitution.**

Topic 26. SAME SEX COUPLE, LIVE IN PARTNERS NOT INCLUDED ON SURROGACY LAWS

Important for subject: Polity

Centre on Tuesday informed the Supreme Court that live-in partners and same-sex couples cannot be allowed to avail of services under the surrogacy law.

- The Court has decriminalized same-sex relations and live-in relations however neither any special provisions have been introduced with respect to samesex/live-in couples nor have they been granted any additional rights, Centre informed the Supreme Court.

Surrogacy Act 2021

- The Act sought to regulate the surrogacy part of a rather flourishing infertility industry in the country.
- It is defined as a **practice where a woman undertakes to give birth to a child for another couple and agrees to hand over the child to them after birth.**

Altruistic surrogacy:

- The Act allows ‘altruistic surrogacy’ — wherein only the medical expenses and insurance coverage is provided by the couple to the surrogate mother during pregnancy.
- **No other monetary consideration will be permitted.**

The intending couple:

- Any couple that has ‘proven infertility’ is a candidate.
- The ‘intending couple’ as the Act calls them, will be eligible if they have a ‘certificate of essentiality’ and a ‘certificate of eligibility’ issued by the appropriate authority.
- The former will be issued if the couple fulfills three conditions: A certificate of infertility of one or both from a district medical board; An order of parentage and custody of the surrogate child passed by a Magistrate’s court; Insurance cover for the surrogate mother.

Eligibility Certificate:

- An eligibility certificate mandates that the couple fulfil the following conditions: They should be Indian citizens who have been married for at least five years; the female must be between 23 to 50 years and the male, 26 to 55 years; they cannot have any surviving children (biological, adopted or surrogate); However, this would not include a ‘child who is mentally or physically challenged or suffers from life threatening disorder or fatal illness.’

Surrogate mother:

- Only a close relative of the couple can be a surrogate mother, one who is able to provide a medical fitness certificate.
- She should have been married, with a child of her own, and must be between 25 and 35 years, but can be a surrogate mother only once.

Regulating Body:

- **The Centre and State governments are expected to constitute a National Surrogacy Board (NSB) and State Surrogacy Boards (SSB) respectively.**
- This body is tasked with enforcing standards for surrogacy clinics, investigating breaches and recommending modifications.
- Further, surrogacy clinics need to apply for registration within 60 days of the appointment of the appropriate authority.

Offences:

- **Offences under the Act include commercial surrogacy, selling of embryos, exploiting, abandoning a surrogate child etc.**
- **These may invite up to 10 years of imprisonment and a fine of up to Rs. 10 lakh.**

Topic 27. THE LAW ON POLYGAMY AMONG RELIGIOUS GROUPS IN INDIA

Important for subject: Polity

ASSAM CHIEF MINISTER Himanta Biswa Sarma has said that the state government will move to ban the practice of polygamy through “legislative action”, and that an “expert committee” would be formed to examine the issue.

Prevalence of polygamy

- The National Family Health Survey-5 (2019-20) showed the prevalence of polygamy was **2.1% among Christians, 1.9% among Muslims, 1.3% among Hindus, and 1.6%** among other religious groups.
- The data showed that the highest prevalence of polygynous marriages was in the Northeastern states with tribal populations. A list of 40 districts with the highest polygyny rates was dominated by those with high tribal populations.
- Polygamy is the practice of having more than one married spouse—wife or husband. The issue is governed both by personal laws and the Indian Penal Code (IPC).
- Traditionally, polygamy—mainly the situation of a man having more than one wife was practised widely in India.

Polygamy under various laws:

Under Hindu law

- After Independence, anti-bigamy laws were adopted by provincial legislatures including Bombay and Madras. The Special Marriage Act, 1954, was a radical legislation that proposed the requirement of monogamy.
- Sub section (a) of Section 4 of the SMA (“Conditions relating to solemnization of special marriages”) requires that “at the time of marriage...neither party has a spouse living”.
- **Parliament passed the Hindu Marriage Act in 1955, outlawing the concept of having more than one spouse at a time.** Buddhists, Jains, and Sikhs are also included under the Hindu Marriage Code.
- Section 5 (“Conditions for a Hindu marriage”) of the Hindu Marriage Act lays down that “a marriage may be solemnized between any two Hindus, if [among other conditions] neither party has a spouse living at the time of the marriage Under Section

17 of the HMA bigamy is an offence, “and the provisions of sections 494 and 495 of the Indian Penal Code, 1860, shall apply accordingly”.

- However, despite bigamy being an offence, the child born from the bigamous marriage would acquire the same rights as a child from the first marriage under the law.

Exception to the bigamy law for Hindu:

- **A crucial exception to the bigamy law for Hindus is Goa**, which follow its own code for personal laws. So, a Hindu man in the state has the right to bigamy under specific circumstances that are mentioned in the *Codes of Usages and Customs of Gentile Hindus of Goa*.
- These circumstances include a case where the wife fails to conceive by the age of 25 or if She fails to deliver a male child by the age of 30.
- The Parsi Marriage and Divorce Act, 1936, had already outlawed bigamy.

Under Muslim law

- Marriage in Islam is governed by the **Shariat Act, 1937**. Personal law allows a Muslim man to have four wives.
- To benefit from the Muslim personal law, many men from other religions would convert to Islam to have a second wife.
- In a landmark ruling in **1995, the Supreme Court in *Sarla Mudgal v Union of India* held that religious conversion for the sole purpose of committing bigamy is unconstitutional.**
- This position was subsequently reiterated in the **2000 judgment in *Lily Thomas v Union of India***.
- Any move to outlaw polygamy for Muslims would have to be a special legislation which overrides personal law protections like in the case of triple talaq.

Topic 28. POST-SC VERDICT; ALL EYES ON MAHARASHTRA SPEAKER NARWEKAR

Important for subject: Polity

With the Supreme Court on Thursday ruling in the Maharashtra political row case that “the Speaker must decide on the disqualification petitions within a reasonable period”, all eyes are now on Speaker Rahul Narwekar.

- The five judge Bench of the Supreme Court did not decide on the disqualification petitions filed by former Chief Minister Uddhav Thackeray.
- The court held Mr. Narwekar’s decision recognising Bharat Gogawale, a candidate of the Shinde group, as the Chief Whip of the Shiv Sena “illegal”.

About Whip

- A whip is a **directive from the party that binds party members of a House to obey the line of the party.**
- Though the **office of whip is not officially recognised in the standing orders, there has been a long tradition to give them a place in the Parliamentary form of government.**
- The whip plays a crucial role in ensuring the smooth and efficient conduct of business on the floor of the House.
- The **whip is an MP/MLA drawn from the party that is in power and also from the party that sits on the opposition bench.** They are vital in maintaining the links between the internal organisation of party inside the Parliament.
- It is also the duty **of the chief whip to maintain discipline of the party on the floor of the House.** Besides, he is responsible for keeping MPs, especially Ministers, informed of opinion in the party on the moods of individual members.
- If an MP/MLA violates his party’s whip, he faces **expulsion from the House under the Anti-Defection Act.**
- **Constitutional status:** The office of ‘whip’, is **mentioned neither in the Constitution of India nor in the Rules of the House nor in a Parliamentary Statute.** It is based on the conventions of the parliamentary government.
- **Non-applicability of Whip:** There are some cases such as **Presidential elections**

where whips cannot direct a Member of Parliament (MP) or Member of Legislative Assembly (MLA) on whom to vote.

Disqualification under Anti defection

- The **Tenth Schedule** contains the **following provisions with respect to the disqualification of members of Parliament and the state legislatures on the ground of defection:**
- **Members of Political Parties:** A member of a House belonging to any political party becomes disqualified for being a member of the House, (a) if he voluntarily gives up his membership of such political party; or (b) if he votes or abstains from voting in such House contrary to any direction issued by his political party without obtaining prior permission of such party and such act has not been condoned by the party within 15 days.
- **Independent Members:** An independent member of a House (elected without being set up as a candidate by any political party) becomes disqualified to remain a member of the House if he joins any political party after such election.
- **Nominated Members:** A nominated member of a House becomes disqualified for being a member of the House if he joins any political party after the expiry of six months from the date on which he takes his seat in the House.

Speaker Power

- Any question regarding disqualification arising out of defection is to be decided by the presiding officer of the House.
- Originally, the act provided that the decision of the presiding officer is final and cannot be questioned in any court. However, in **KihotoHollohan case (1993)**, the **Supreme Court declared this provision as unconstitutional on the ground that it seeks to take away the jurisdiction of the Supreme Court and the high courts.**
- It held that the presiding officer, while deciding a question under the Tenth Schedule, function as a tribunal. Hence, his decision like that of any other tribunal, is Important for subject to judicial review on the grounds of mala fides, perversity, etc.
- The presiding officer of a House is empowered to make rules to give effect to the provisions of the Tenth Schedule. All such rules must be placed before the House for 30 days. The House may approve or modify or disapprove them.

- According to the rules made so, **the presiding officer can take up a defection case only when he receives a complaint from a member of the House.**
- Before taking the final decision, he must give the member (against whom the complaint has been made) a chance to submit his explanation.
- He may also refer the matter to the committee of privileges for inquiry. Hence, defection has no immediate and automatic effect.

Topic 29. MSCI TWEAK: WHAT TRIGGERED THE SELL-OFF IN HDFC TWINS?

Important for subject: Economy

Market participants said MSCI intends to delete HDFC from MSCI Global Standard Index and at the same time add HDFC Bank to the large cap segment of MSCI Global Standard Indexes

- This means that the weight of the merged entity will be lower than what HDFC Ltd currently has in the MSCI India Index.
- Currently HDFC Ltd weight is 6.74 per cent in MSCI India Index and as per our preliminary calculations the merged entity would have slightly lower weight of about 6.5 per cent.

Background:

- HDFC Bank will merge parent HDFC in its ambit to enable seamless delivery of home loans and leverage on the large base of customers of HDFC Bank.
- The merger is to create a large balance sheet and net worth that would allow a greater flow of credit into the economy. It will also enable the underwriting of larger ticket loans, including infrastructure loans, an urgent need of the country.

What is MSCI India Index?

- Morgan Stanley Capital International (MSCI) has set up many global indices, one of which is a composite of Indian stocks-the MSCI India index.
- Many reputed Indian companies across sectors are included in the index. These companies amount to at least 85% of the total equity offered by Indian companies.

How is the MSCI India Index formed?

- The MSCI India is a **weighted index just like the Sensex**. This means every stock on the index has a particular weightage, which depends on a number of parameters.
- The three most important are: the returns (dividend) that investors receive on the shares; the company's total turnover, and its market capitalization.

Why FIIs use MSCI India index?

- Foreign investors want international markets to invest their funds. They want to know more about the stability and volatility in the prices of shares.

The MSCI India Index acts as an indicator of the soundness of the Indian capital market.

- The weightage of a company depends on its performance in different categories such as the total turnover, market capitalization and dividend return.
- Greater the weightage, higher will be the amount of foreign investment into the stocks. In simple words, **the amount of funds that a foreigner will invest in an Indian share will be directly dependent on the stock's weightage on the MSCI index.**
- If the weightage of a company is reduced then there is always a possibility of foreign investors withdrawing their funds.

Topic 30. CHARTERED ACCOUNTANTS, COMPANY SECRETARIES NOW UNDER AMBIT OF MONEY LAUNDERING LAW

Important for subject: Economy

Notifying changes to the Prevention of Money Laundering Act, the Finance Ministry has brought in practicing chartered accountants, company secretaries, and cost and works accountants carrying out financial transactions on behalf of their clients into the ambit of the money laundering law.

- **Lawyers and legal professionals, however, seem to have been kept out in the new definition of entities covered under the PMLA.**

Prevention of Money Laundering Act

- The PMLA was enacted in 2002 and it came into force in 2005. The chief objective of this legislation is to fight money laundering, that is, the process of converting black

money into white.

- The Act enables government authorities to confiscate property and/or assets earned from illegal sources and through money laundering.
- Under the PMLA, the burden of proof lies with the accused who has to prove that the suspect property/assets have not been obtained through proceeds of crime.
- The provisions of this act are applicable to all financial institutions, banks (Including RBI), mutual funds, insurance companies, and their financial intermediaries.

PMLA Amendment 2019

- The amendment seeks to treat money laundering as a stand-alone crime.
- Till now Money Laundering was not an independent crime; rather depended on another crime, known as the ‘predicate offence’ or ‘scheduled offence’, the proceeds of which are made the Important for subject matter of crime of money laundering.
- It also expands the ambit of “proceeds of crime” to those properties which “may directly or indirectly be derived or obtained as a result of any criminal activity relatable to the scheduled offence.
- The most crucial amendments are the deletion of provisions in sub-sections (1) of Section 17 (Search and Seizure) and Section 18 (Search of Persons).
- These provisions required the pre-requisite of an FIR or charge sheet by other agencies that are authorised to probe the offences listed in the PMLA schedule.
- An explanation is added to Section 45 that clarifies that all PMLA offences will be cognisable and non-bailable.
- Therefore, ED will be empowered to arrest an accused without a warrant, Important for subject to certain conditions.
- Another vital amendment makes concealment of proceeds of crime, possession, acquisition, use, projecting as untainted money, or claiming as untainted property as independent and complete offences under the Act.
- Section 72 will now give power to the Centre to set up an Inter-Ministerial Coordination Committee for inter-departmental and inter-agency coordination for operational and policy level cooperation, for consultation on anti-money laundering and counter-terror funding initiatives.

Recent Changes in notification:

- An activity will be recognised under the PMLA if these professionals carry out financial transactions on behalf of their client such as buying and selling of any immovable property; managing of client money, securities or other assets; management of bank, savings or securities accounts; organisation of contributions for the creation, operation or management of companies; creation, operation or management of companies, limited liability partnerships or trusts, and buying and selling of business entities.
- Earlier the government had **widened the ambit of reporting entities under money laundering provisions to incorporate more disclosures for non governmental organisations and defined politically exposed persons (PEPs) under the PMLA in line with the recommendations of the FATF**
- The new changes have been made in the sub-clause (vi) of clause (sa) of sub-section (1) of section 2 of the PMLA, which defines different categories of persons covered under the law.
- The financial **professionals who have obtained certificates of practice as chartered accountants**, company secretaries, cost and work accountants would be defined as relevant persons for reporting transactions on behalf of their individual clients.
- The amendments are expected to aid investigative agencies further in their probe against dubious transactions involving shell companies and money laundering,
- As per **the FATF recommendations relating to designated non-financial businesses and professions to be followed by member countries**, professionals such as lawyers, notaries, other independent legal professionals and accountants should be required to report suspicious transactions when, on behalf of or for a client, they engage in a financial transaction linked to buying and selling of real estate;
- Managing of client money, securities or other assets; management of bank, savings or securities accounts; organization of contributions for the creation, operation or management of companies; creation, operation or management of legal persons or arrangements, and buying and selling of business entities
- Countries are strongly encouraged to extend the reporting requirement to the rest of the professional activities of accountants, including auditing,” the FATF recommendations stated

Financial Action Task Force

- The Financial Action Task Force (FATF) is an **inter-governmental** body established in 1989 during the G7 Summit in Paris.
- The objectives of the FATF are to set standards and promote effective implementation of legal, regulatory and operational measures for combating money laundering, terrorist financing and other related threats to the integrity of the international financial system.
- Its Secretariat is located at the Organisation for Economic Cooperation and Development (OECD) **headquarters in Paris**.
- Member Countries: it consists of thirty-seven member jurisdictions. India is one of the members.

Topic 31. RBI WANTS BANKS TO SIGN NEW LOCKER AGREEMENT WITH CLIENTS

Important for subject: Economy

Users of lockers will have to sign a fresh agreement with their respective banks, The Reserve Bank of India asking for revisions in the existing document.

What is the new regulation regarding lockers?

- The revised safe deposit locker agreements now clearly specify that lockers can be used only for **legitimate purposes such as storing jewellery and documents and not for storing any cash or currency, arms, weapons, drugs, contraband, or hazardous substances**.
- The license granted to use the locker is **only for the customer's own use and is non-transferable**.
- The agreements, which are based on the **Indian Banks' Association's model agreement**, state that the customer will be responsible for the misuse of the key to the locker provided by the bank or the password generated for having access to the locker.
- The bank will not be responsible for any unauthorised use of a key or password. The customer will have a right to use the locker for keeping belongings and expect reasonable care by the bank for protecting such belongings, and in case of the bank's failure to do so, avail of such remedies as may be available from time to time under

the applicable law and regulations.

- Banks will bear the cost of stamp papers while executing supplementary agreements with existing locker-hirers only. For others, the cost of stamp paper will be borne by the customers.
- The bank will have the right to recover the rent and any other cost incurred by the bank in relation to the locker to the debit of the customer's account in the event the same is not paid by the customer in advance or when due, per the model agreement
- Further, a bank can refuse access to the locker if the rent due on the locker remains unpaid and a customer fails to provide proof of identity when demanded by the bank at the time of seeking access to the locker.

Topic 32. RBI GOLD RESERVES RISE TO 794.64 TONNES

Important for subject: Economy

RBI has increased its gold reserves by 34.22 tonnes YoY to reach 794.64 tonnes at the end of March 2023, according to the central bank's data.

- Gold is considered a **safe-haven asset and has been historically used to back a country's currency.**

Significance of Gold Reserves

- **Economic stability:** Gold reserves are often seen as a **symbol of economic stability and confidence, especially during times of financial crisis or uncertainty.**
- Holding gold reserves can help central banks to maintain the stability of their currency and the economy.
- **Diversification:** Gold is considered a **safe-haven asset and can provide diversification to a country's foreign exchange reserves portfolio.**
- Diversification helps to reduce the risks associated with any single asset class.
- **Hedge against inflation:** Gold is considered an **inflation hedge as its value tends to increase during times of high inflation or when the value of a currency is depreciating.** Holding gold reserves can help to protect the purchasing power of a country's currency.
- **International transactions:** **Gold reserves can be used as collateral for loans and international transactions.** Countries can also use gold reserves to **settle**

international debts.

- **Confidence-building:** The level of a country's gold reserves can be an indicator of the country's financial strength and stability. High levels of gold reserves can help to build confidence among investors and other countries.

Breakdown of RBI's gold reserves

- **Total:** As of March-end 2023, the **RBI held 794.64 metric tonnes of gold**, including gold deposits of 56.32 metric tonnes.
- **Domestic and abroad:** Out of the total gold reserves, **22 metric tonnes of gold is held overseas in safe custody** with the Bank of England and the Bank of International Settlements (BIS), **while 301.10 metric tonnes of gold is held domestically.**

How much do these gold reserves value?

- In value terms (USD), the share of gold in the total foreign exchange reserves increased from about 7.06% as of September-end 2022 to about 7.81% as of March-end 2023, as per the RBI's report.
- During the half-year period, the reserves increased from \$532.66 billion as of September-end 2022 to \$578.45 billion as of March-end 2023.

Foreign Exchange (Forex) Reserve

- Foreign exchange reserves are **important assets held by the central bank in foreign currencies as reserves.**
- They are **commonly used to support the exchange rate and set monetary policy.**
- In India's case, foreign reserves include Gold, Dollars, and the IMF's quota for Special Drawing Rights.
- Most of the reserves are usually held in US dollars, given the currency's importance in the international financial and trading system.
- Some central banks keep reserves in Euros, British pounds, Japanese yen, or Chinese yuan, in addition to their US dollar reserves.

India's forex reserves cover:

- Foreign Currency Assets (FCAs)

- Special Drawing Rights (SDRs)
- Gold Reserves
- Reserve position with the International Monetary Fund (IMF)

Topic 33. WHAT THE GOVT'S NEW GST COMPLIANCE MEASURES SAY AND HOW THEY COULD IMPACT BUSINESSES

Important for subject: Economy

In two significant measures to curb tax evasion and increase compliance under the Goods and Services Tax (GST) regime, the government has decided to **lower the threshold for businesses to generate e-invoice** for business-to-business (B2B) transactions, from Rs 10 crore to Rs 5 crore, and has rolled out the automated return scrutiny module for GST returns in a backend application for central tax officers.

What is the automated return scrutiny module?

- It aims to enhance tax compliance, reduce manual intervention and increase tax administration efficiency by using data analytics.
- The **Automated Return Scrutiny Module, integrated into the ACES-GST backend application, leverages data analytics to identify risks and discrepancies in GST returns.**
- Tax officers can scrutinize GST returns of Centre Administered Taxpayers selected based on data analytics and risks detected by the system. The module automatically generates alerts in cases of non-compliance.
- The Automated Return Scrutiny Module's implementation has begun with the scrutiny of GST returns for the financial year 2019-20
- It was implemented by **The Central Board of Indirect Taxes and Customs (CBIC)**

What are the changes for e-invoicing and its impacts?

- The government lowered the threshold for businesses to **generate e-invoice for business-to-business (B2B) transactions to Rs 5 crore from Rs 10 crore under GST.** The changes will come into effect from August 1 **e-Invoicing'** or **'electronic invoicing'** is a system in which **B2B invoices and a few other documents are authenticated electronically by GSTN** for further use on the common GST portal.

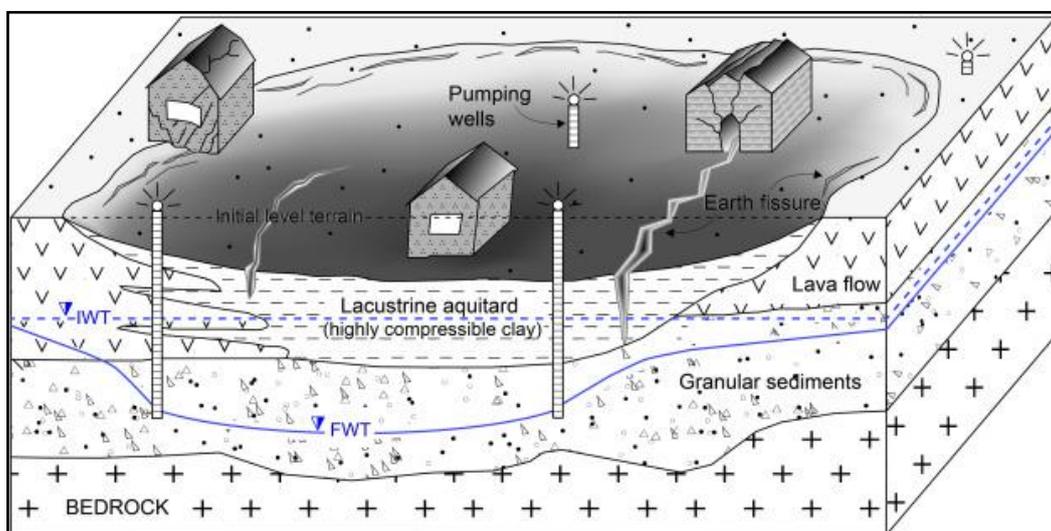
- Reduction in the e-invoicing threshold helps to **boosting GST revenue collections and checking frauds** it will also increase compliance requirements for smaller businesses For companies, **e-invoicing-compliant result in proper flow of input tax credit** and reduce the credit issues.

Goods and Service Tax:

- The GST aims to **streamline the taxation structure** in the country and **replace a gamut of indirect taxes with a singular GST** to simplify the taxation procedure.
- It has been established by **the 101st Constitutional Amendment Act**.
- It is an indirect tax for the whole country on the **lines of “One Nation One Tax”** to make India a unified market.
- The Goods and Services Tax (GST), rolled out in July 2017, **marked a major shift from the traditional production-linked tax to a consumption-based tax**.
- The new regime **subsumed state levies** such as VAT, sales tax, octroi/entry tax together with central levies such as central excise and service tax.
- **States gave up some of their taxation rights in lieu of the Centre** passing on their revenue share under GST and **also compensating them for potential revenue losses in the first five years**.
- It is **levied on the value addition** and provides set offs. As a result, it **avoids the cascading effect or tax on tax** which increases the tax burden on the end consumer

Topic 34. GROUNDWATER EXPLOITATION AND LAND SUBSIDENCE

Important for subject: Geography



Several independent studies have found out that the excessive groundwater extraction is causing land subsidence in north-west India, including Punjab, Haryana, Delhi, and Faridabad.

- The **Central Ground Water Board (CGWB)**, a subsidiary body of the **Jal Shakti Ministry**, is **tasked with assessing the state of India's groundwater resources**.
- It has a system of groundwater observation-wells and monitors water levels four times a year. It, however, does not analyse the consequences of 'over exploitation.'

Over exploitation:

- Agricultural practices in north-west India are heavily dependent on groundwater withdrawal. With limited monsoon rain, the groundwater table is precariously low.
- The CGWB has reported that many groundwater blocks are over-exploited, leading to the depletion of underlying aquifers.
- In Punjab, for instance, 76% of the groundwater blocks are 'over exploited'.
- In Chandigarh, it is 64% and about 50% in Delhi. This means that more groundwater than can be recharged is extracted.
- **Land subsidence is caused when these aquifers run dry and the layers of soil and rock above them start to sink.**
- **GRACE (Gravity Recovery and Climate Experiment) satellites based analysis** has shown a correlation between building deformities and groundwater withdrawals, and unplanned growth and urbanisation have exacerbated the issue in some parts of Delhi-NCR.
- **Land subsidence can lead to increased flooding, as the land sinks and reduces the capacity of water bodies to hold water.** In the Ganga basin, overextraction of groundwater has caused the land to sink, leading to flooding in the area.

Gravity Recovery and Climate Experiment (GRACE)

- The Gravity Recovery and Climate Experiment (GRACE) was a joint mission of NASA and the German Aerospace Center (DLR).
- Twin satellites took **detailed measurements of Earth's gravity field anomalies** from its launch in March 2002 to the end of its science mission in October 2017.
- By measuring gravity anomalies, **GRACE showed how mass is distributed around**

the planet and how it varies over time.

- Data from the GRACE satellites is an important tool for studying Earth's ocean, geology, and climate.

GRACE-FO Mission

- The **Gravity Recovery and Climate Experiment Follow-On (GRACE-FO) mission** is a partnership between **NASA and the German Research Centre for Geosciences (GFZ)**.
- GRACE-FO is a successor to the original GRACE mission, which orbited Earth from 2002-2017.
- It carries on the extremely successful work of its predecessor while testing a new technology designed to dramatically improve the already remarkable precision of its measurement system.

Why need such data on groundwater and soil moisture?

- **Groundwater and soil moisture** — which depicts wetness in soil — are crucial for irrigation and crop growth.
- The need to constantly monitor groundwater and soil moisture is important since both act as useful indicators for predicting drought conditions.
- **One of the goals of the new global maps is to make the same consistent product available in all parts of the world, especially in countries that do not have any groundwater-monitoring infrastructure.**
- The data would help in managing the selection of appropriate agricultural crops and predicting yields.

Topic 35. MOCHA IS THE STRONGEST CYCLONE ON EARTH SO FAR IN THIS YEAR

Important for subject: Geography

Mocha, with a recorded wind speed of 150 knots or 277 kilometres per hour, also became the strongest cyclone in the North Indian Ocean during the pre-monsoon season, tying with Cyclone Fani.

- Cyclone Mocha was a **very severe cyclonic storm** that formed in the Bay of Bengal on May 10, 2023. The **storm intensified rapidly**, reaching **peak winds of 160 kilometers** per hour (100 miles per hour) before making landfall in Bangladesh on May 14. The storm caused widespread damage in Bangladesh and Myanmar.
- IMD had predicted the **formation of a ‘very severe cyclonic storm’**, which was later **upgraded to ‘extremely severe cyclonic storm’** and **now a super cyclone** is on the cards.
- Mocha **made landfall during the afternoon hours** of May 14 on the Myanmar coast near Sittwe at a speed of 180-190 kmph, gusting to 210 kmph, IMD stated.
- Cyclone Mocha was the **strongest cyclone to hit Bangladesh** in over a decade.
- The storm caused widespread flooding and damage to homes, businesses, and infrastructure. The government of Bangladesh declared a state of emergency and deployed the military to help with relief efforts.
- Cyclone Mocha also caused significant damage in Myanmar. The storm made landfall in the **country’s Rakhine state**, which is **home to many Rohingya refugees**. The storm **displaced thousands of refugees and destroyed many of their homes**. The United Nations estimates that Cyclone Mocha could have a devastating impact on the Rohingya refugee population.
- **Heavy rainfall**, with the **possible risk of floods**, flash floods and landslides and there will be major impacts both ahead and after landfall for potentially hundreds of thousands of the **world’s most vulnerable people**.
- According to IMD, the **Northeastern states** of Tripura, Mizoram, Nagaland, Manipur and the southern part of Assam were **likely to witness heavy-to-very heavy rains** until May 18.
- It also mentioned that **maximum temperatures** were above normal by 2-4 degrees

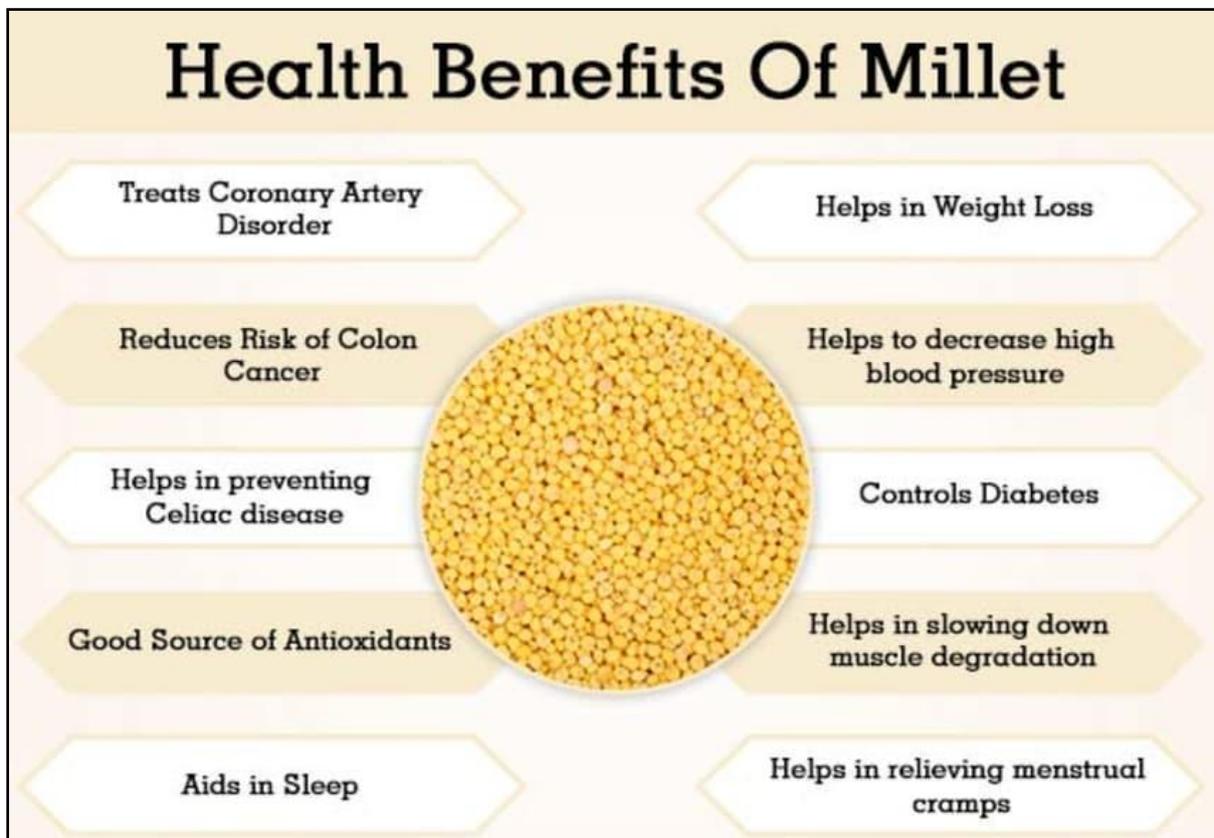
Celsius over parts of Northwest, central and Northeast India.

Naming of Cyclone:

- Cyclones are mostly **named after regions and areas where they are formed**, mostly the **region of the sea or river** where it is formed. Similarly, Cyclone Mocha was **named after a part of the Red Sea port** which introduced coffee into the world 500 years ago. Hence, on a **suggestion made by Yemen**, the cyclone was named Cyclone Mocha (Mokha).

TOPIC 36. NUTRITIONAL Value of Millets

Important for subject: Geography



Millets are gaining popularity across the world as **the UN Food and Agriculture Organization (FAO) has declared 2023 to be the “International Year of Millets”**

- Millets are **mainly grasses that are cultivated across the world as cereal crops, particularly in the tropical regions of Africa and Asia.**
- The most famous varieties of millet include **pearl millet, barnyard millet, finger millet, and foxtail millet.**

- **India is the largest producer of millets in the world.**
- Evidence indicates that millets were first cultivated in the Indian subcontinent about five millennia ago.
- According to reports, India In 2021-2022 accounted for about 40.51% of the world's pearl millet production and 8.09% of sorghum.
- In India, pearl millet accounts for about 60% of all the millet production which is followed by sorghum (27%), and ragi (11%).

Significance of Millet cultivation

- **High nutritional value:** The nutritional value associated with millets is very high compared to other major extant food crops.
- The nutritional content of millets includes carbohydrates, proteins, fibre, amino acids, and minerals.
- **Drought resistant:** Millets have the ability to withstand and grow in harsh, resource-poor conditions.
- Millets are drought-tolerant and can grow in warm weather, requiring less moisture and loamy soil.
- **Affordable nature:** Millets can grow on arid lands with minimal inputs. Thus cultivation of millet ensures that affordable foods can be produced that can contribute to healthy diets and a healthy environment.
- **Food security and economic viability:** Millets being climate-smart grains offer great opportunities for strengthening food security, nutrition security and bolstering economic growth.

Processing of Millets and its impact on nutritional content

- The 'whole grain' consists of the endosperm, germ, and bran (pericarp + aleurone). However, the "**refined grain**" refers only to the endosperm.
- The endosperm is the largest part of the millet kernel and is called the "storage centre". The **endosperm also has a protein covering called the "aleurone"**.
- The pericarp has an outer covering called the **husk**. The husk and the pericarp protect the kernel from harsh conditions, diseases, and damages.

Effect of processing of millets:

- **Processing of millets for consumption can affect nutrients in three different ways, namely enhancing them, suppressing them, and ignoring them.**
- During processing, the husk is first removed from the grains as it is made of cellulosic matter that the human body cannot digest.
- However, this results in the **decline of the phytic acid and polyphenol contents** in the millets.
- The next step in processing **involves decortication of the grain**, wherein the outer covering is removed in order to expose the seed. This is made to make the **grain more edible and attractive.**
- **Decortication of the grains adversely impacts the crude and dietary fibre content** in the millet grains.
- The next steps **involve milling, grinding (into flour), and sieving to remove large impurities such as bran.**
- Studies have revealed that **sieving made the flour more digestible.** However, **it also reduced nutrient content due to the removal of bran.**

Polishing of Millets:

- Polishing is **typically the last step and it is a process wherein brown rice**, for example, is changed to white rice by rubbing off the bran and the germ.
- According to various studies, **polishing removed 8-10% of grain weight** and also **removed important nutritional contents such as iron, magnesium, phosphorus, potassium, and manganese.**

Topic 37. RABINDRANATH TAGORE

Important for subject: History

Prime Minister recently paid tributes to Nobel laureate Rabindranath Tagore on his birth anniversary.

About Rabindranath Tagore:

- He was a **world-renowned poet, litterateur, philosopher and Asia's first Nobel laureate.**

- He was born in Kolkata on May 7, 1861.
- He was the **son of Debendranath Tagore, a prominent philosopher and religious reformer.**
- He was popularly known as **Bard of Bengal, and people used to call him Gurudev.**
- He introduced new prose and verse forms and the use of colloquial language into **Bengali literature, thereby freeing it from traditional models based on classical Sanskrit.**
- He was highly influential in introducing Indian culture to the West and vice versa.
- **In 1913 he became the first non-European to receive the Nobel Prize for Literature.**
- He was also an influential artist and musician. He wrote around 2230 songs and painted 3000 paintings. **His songs are known as Rabindra Sangeet.**
- **Rabindranath Tagore wrote India's national anthem, Jana Gana Mana. He also wrote Amar Sonar Bangla, the national anthem for Bangla The Sri Lankan national anthem was inspired by his work.**
- He was awarded a **knighthood in 1915, but he repudiated it in 1919 as a protest against the Amritsar (Jallianwalla Bagh) Massacre.**
- **Viswa Bharti University, which was known as Shantiniketan** founded by Rabindranath Tagore.

Major Works:

- **Tagore's most notable work of poetry is Gitanjali: Song Offerings, for which he received the Nobel Prize in Literature in 1913.**
- Other notable poetry publications include **Sonar Tari and Manasi.**
- He wrote novels, plays, and short stories in both languages, including the **plays Chitra and The Post Office.**
- He is credited with pioneering the short story form in Bengali literature, with some of his best work collected in **The Hungry Stones and Other Stories and The Glimpses of Bengal Life.**

**Topic 38. EU IN ISRAEL CANCELS EUROPE DAY EVENT OVER BEN-GVIR:
WHAT IS THIS DAY?**

Important for subject: History

The European Union's delegation in Israel Monday (May 8) cancelled its Europe Day diplomatic reception over the planned participation of far-right Israeli minister Itamar Ben-Gvir

- On the continent, **the Russia-Ukraine conflict casts a long shadow on Europe Day** celebrations this year. Russia has cancelled events in many regions, fearing Ukrainian shelling. On the other hand, in an attempt to break from its Soviet past, Ukraine has decided to observe Europe Day on May 8 (like Western Europe) rather than May 9 (like Russia).

Europe Day:

- Europe Day held on 9 May every year celebrates peace and unity in Europe. The date marks the **anniversary of the historic 'Schuman declaration' that set out his idea for a new form of political cooperation in Europe**
- **The Schuman Declaration** was presented by French foreign minister Robert Schuman on 9 May 1950.
- **Victory in Europe Day (V-E Day or simply, Europe Day) is one of the most important days in the history of Europe.** It was on May 8, 1945 (May 9 in Eastern Europe) that the surrender of the German armed forces was formally accepted, bringing an end to a war that had killed millions on battlefields, across bombarded cities and in brutal concentration camp
- **World War II officially began in 1939, with Germany's invasion of Poland drawing Britain into the War.** While Germany enjoyed initial success, conquering much of Western Europe and making inroads in the East, the Luftwaffe's failure in the Battle of Britain, Hitler's doomed invasion of Soviet Russia, and the entry of the US into the conflict in 1941 would soon turn the tide
- **By 1945, Germany faced inevitable defeat.** On the East, the Red Army marched towards Berlin with its enormous manpower and resource base. On the West, British, American and other allied troops hastened towards the German capital, after the successful D-Day landings on June 6, 1944.

- Germany's biggest European ally Italy had collapsed and the Japanese were preparing for a lengthy campaign to defend their home islands, having lost most of the territory they had gained in the early years of the War.
- Thus, on **April 30, 1945, as the Battle of Berlin raged on with both Soviets and Western Allies competing with each other to capture the city**, German Fuhrer and Nazi Party supreme Adolf Hitler died by suicide.
- Karl Donitz succeeded Hitler and immediately started negotiating a full surrender.
- The German Instrument of Surrender was signed on May 8, 1945 in Karlshorst, Berlin.

Topic 39. INTACH DEMANDS HERITAGE TAG FOR PARALAKHEMUNDI RAILWAY STATION IN ODISHA

Important for subject: History

The Odisha unit of Indian National Trust for Art and Cultural Heritage (INTACH) has demanded preservation and heritage status for the Paralakhemundi railway station in Odisha's Gajapati district.

Paralakhemundi railway station:

- It belongs to **East Coast Railway** of Waltair division
- It is located in **Gajapati district of Odisha**
- It was established by Gajapati Maharaja of Paralakhemundi and it is first odisha
- Origin Railway station of Odisha state
- This line was the **first Lite rail line of eastern India** otherwise known as **Parlakimedi Light Railway PLR**
- The Mahendragiri Hills, which are biodiversity, heritage and pilgrimage site, have the nearest railhead at Paralakhemundi.
- The hills have some of the oldest temples of India which find reference in both the Ramayana and Mahabharata

Indian National Trust for Art and Cultural Heritage (INTACH)

- INTACH was founded **in 1984 in New Delhi**
- It aims to create a membership organisation to stimulate and spearhead heritage awareness and conservation in India

- It is a non-profit charitable organisation registered under the Societies Registration Act, 1860
- The INTACH Logo, based on the anthropomorphic copper figure from Shahabad, Uttar Pradesh, belonging to the enigmatic Copper Hoards of the Ganga Valley

World Heritage Site

- It is a landmark or area with legal protection by an **international convention (the protection of the World Cultural and Natural Heritage)** administered by the **UNESCO in 1972.**
- They are designated by UNESCO for having **cultural, historical, scientific or other form of significance.**
- The sites are judged to contain cultural and natural heritage around the world considered to be of outstanding value to humanity.
- There are **40 UNESCO World Heritage Sites in India. Dholavira and Ramappa Temple are the latest addition** to the list under the 'Cultural Category'.

Topic 40. MINIMISING THE THREAT FROM IEDS

Important for subject: General Science

On the 26th of April 2023, an improvised explosive device (IED) blast led to the death of about 10 security personnel in the Dantewada region in Chhattisgarh while they were on an anti-Maoist mission.

- Again on the 5th of May, five soldiers were killed in a gunfight with militants in the Rajouri-Poonch sector of the Jammu division and before the gunfight broke out an explosive device was triggered.

About Improvised Explosive Device (IED):

- IED is a type of **unconventional explosive weapon that can take any form and be activated in a variety of ways.**
- IEDs are **used by criminals, vandals, terrorists, suicide bombers, and insurgents.**
- Because they are improvised, **IEDs can come in many forms**, ranging from a small pipe bomb to a sophisticated device capable of causing massive damage and loss of life.

- IEDs can be **carried or delivered in a vehicle; carried, placed, or thrown by a person; delivered in a package; or** concealed on the roadside.
- The **extent of damage** caused by an IED depends **on its size, construction, and placement** and whether it incorporates a high explosive or propellant.
- The term IED came into common usage during the Iraq War that began in 2003.

Elements of an IED:

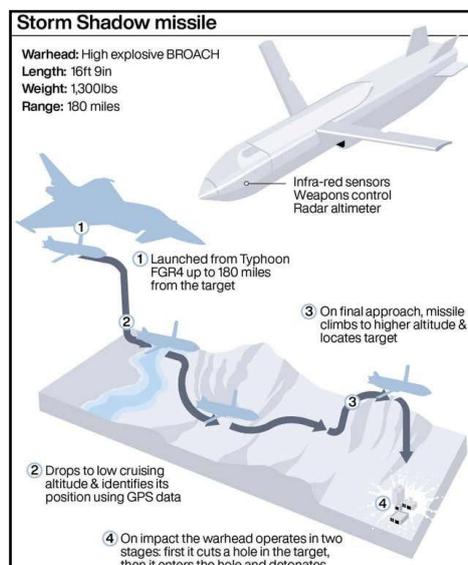
- It consists of a variety of components that include an **initiator, switch, main charge, power source, and container.**
- IEDs may be surrounded by or packed with additional materials or “enhancements” such as nails, glass, or metal fragments designed to increase the amount of shrapnel propelled by the explosion.
- An IED can be initiated by a variety of methods depending on the intended target.

Materials Used as Explosives in IEDs:

- Many commonly available materials, such as **fertilizer, gunpowder, and hydrogen peroxide, are used as explosive materials in IEDs.**
- Explosives **contain fuel and an oxidizer, which provides the oxygen needed to sustain the reaction.**

Topic 41. STORM SHADOW MISSILE

Important for subject: General Science



Russia's Defence Ministry recently said that **Ukrainian aircraft had struck two industrial sites in the Russian-held city of Luhansk in eastern Ukraine** with

- Storm Shadow missiles supplied by Britain.

About Storm Shadow Missile:

- It is a **long-range cruise missile** with stealth capabilities, jointly developed by the UK and France.
- The missile is intended to strike high-valued stationary assets such as airbases, radar installations, communications hubs and port facilities.
- Able to be operated in extreme conditions, the weapon offers operators a highly flexible, deep-strike capability based on a sophisticated mission planning system.
- The Storm Shadow is also in service with the air forces of Egypt, India, Italy, Greece, Saudi Arabia, Qatar and the United Arab Emirates (UAE).

Features:

- It is **typically launched from the air**.
- It carries a 450kg conventional warhead to a range of up to 200 miles (300km).
- The missile weighs 1.3 tonnes and is just over 5m long.
- It is **equipped with fire-and-forget technology and fully autonomous guidance**.
- The missile is fitted with a passive imaging infrared seeker.
- The missile is programmed with every detail of the target and the path to be taken to reach the target prior to its launch.
- Once launched, the Storm Shadow drops to a low altitude to avoid detection by enemy radar before latching onto its target with the infrared seeker.

Topic 42. OPERATION SAMUDRAGUPT

Important for subject: Government Schemes

The Narcotics Control Bureau (NCB) and the Indian Navy, in a joint operation off the Kerala coast, have **seized approximately 2,500 kg of methamphetamine** valued at **about 15,000 crore and originating from Pakistan**.

- This is the largest drug seizure in terms of financial value by any anti-drug enforcement agency in the nation.

- The seizure is a part of Operation Samudragupt, which seeks to rid the Indian Ocean region of drugs by targeting drug trafficking on ships.

Operation Samudragupt

- The Director General of NCB started Operation Samudragupt to stop the trafficking of heroin and other drugs in the Indian Ocean region.
- Officers from the Operations Branch of NCB Headquarters participated in the operation, which was led by Sanjay Kumar Singh, Deputy Director General (Ops), NCB.
- The operation's main goal was to gather actionable intelligence that could result in the interdiction of ships transporting illegal drugs.
- The team exchanged information with narcotics law enforcement organisations including DRI and ATS Gujarat as well as intelligence organisations like the Indian Navy's Intelligence Wing and NTRO.

Methamphetamine- the stimulant drug

- Methamphetamine — meth for short — is a powerful, highly addictive stimulant that affects the central nervous system, and is used to treat attention-deficit hyperactivity disorder (ADHD) and narcolepsy, a sleep disorder.
- Crystal methamphetamine or crystal meth is a form of the drug that looks like glass fragments or shiny, bluish-white rocks.
- It is chemically similar to amphetamine.
- Methamphetamine can be smoked, swallowed in the form of a pill or tablet, snorted, and injected after dissolving the powder in water or alcohol.
- Methamphetamine can lead to myocardial infarction (heart attack); it can cause stroke.
- The drug can affect the heart, the brain, and the kidneys. It can result in the blood pressure shooting up suddenly. So, it is a very dangerous drug if there is an overdose.

Topic 43. TERRITORIAL ARMY

Important for subject: Governmental Schemes

Defence Minister Rajnath Singh has approved the posting of women officers with Engineer Regiments of the Territorial Army (TA) along the Line of Control (LoC).

Territorial Army:

- It aims to commemorate its raising by the first Governor General C Rajagopalachari on this day in 1949.
- The **Territorial Army (TA) was raised by the Britishers in 1920 through Indian Territorial Act of 1920** and it was org into two wings namely – ‘The **Auxiliary Force**’ for Europeans & Anglo-Indians and ‘The **Indian Territorial Force**’ for Indian Volunteers.
- After Independence **Territorial Army Act was passed in 1948** and the Territorial Army was formally inaugurated by the first Indian Governor General Shri C Rajagopalachari on 09 Oct 1949.

Role:

- The **Territorial Army is part of Regular Army** and its **present role is to relieve the Regular Army from static duties and assist civil administration in dealing with natural calamities and maintenance of essential services in situations** where life of the communities is affected or the Security of the Country is threatened and to provide units for Regulars Army as and when required.

Eligibility:

- Any citizen **between the age of 18-42 can be a part of the service.**
- The pensionable age for a soldier below officer’s rank in the TA is the same as that of a regular soldier — 15 years.

Operations:

- The TA units were **also actively involved in operations during the 1962, 1965 and 1971 wars.**
- Since 2020, the Indian military has been recalibrating the TA for better operational

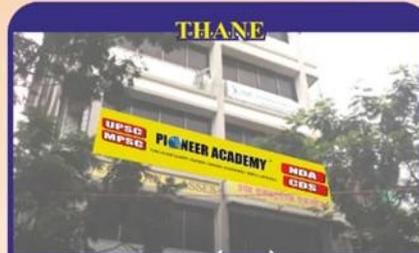
and intelligence roles, especially in the Andaman Islands to keep an eye out for possible Chinese intrusions in the region.

Motto: The motto of the Territorial Army of India is ‘SavdhaniVaShoorta’ (Vigilance and Valour).

PIONEER ACADEMY



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Chendani, Thane (W) - 400 601
Mob : 75060 10635



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Better Home Hotel, Opp. Andheri (E) - 400 601
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