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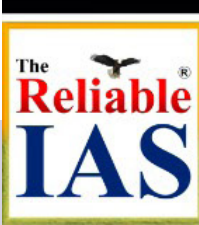
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Chapter

1

Art & Culture

Lokmanya Tilak National Award

Why in News

- Prime Minister honoured with the Lokmanya Tilak National Award on his visit to Pune.

Important points

- Prime Minister was honoured to receive a prize named after Tilak, who was at the forefront of the freedom struggle, and he would donate his prize money of Rs 1 lakh to the Namami Gange project.
- Modi will also open the new Metro rail line extension that will make commuting between Pimpri-Chinchwad and Pune easier and faster, along with inaugurating and laying the foundation stones for development projects at the Parade ground of the Shivajinagar police headquarters.



About Award

- The award was instituted in 1983 by the Tilak Smarak Mandir Trust.
- This award is given every year on 1st August, the death anniversary of Lokmanya Tilak, to persons who have made remarkable and extraordinary contributions, working for the progress and development of the nation.

Lokmanya Tilak

- Bal Gangadhar Tilak, commonly known as Lokmanya Tilak, was a prominent Indian nationalist, freedom fighter, social reformer, and political leader during the Indian independence movement.
- He was one of the prime architects of modern India and probably the strongest advocate of Swaraj or Self

Rule for India

- He is known for his slogan, "Swaraj is my birthright and I shall have it."
- He was born as Keshav Gangadhar Tilak and his followers bequeathed upon him the title of 'Lokmanya', meaning he who is revered by the people.

Literary works

- Tilak was a prolific writer and journalist. He used his newspaper, "Kesari" (meaning Lion) in Marathi and later "Maratha" in English to disseminate nationalist ideas.
- Some of his notable literary works include "The Arctic Home in the Vedas," where he presented his theory that the Vedas originated in the Arctic region, and "Shrimad Bhagavad Gita Rahasya," an interpretation of the Bhagavad Gita from a nationalist perspective.

Social Reform

- Lokmanya Tilak was also an advocate of social reform. He actively supported the eradication of social evils like untouchability and child marriage and promoted education for women.

Quit India Movement Day 2023

Why in News

- Every year Quit India Day is observed on August 8 to commemorate the occasion. This year marks the 81st anniversary of the event.



Important Points

- The Quit India Movement, also known as the August Movement, was a significant civil disobedience movement launched by Mahatma Gandhi and the Indian National Congress in August 1942 with the aim to end British colonial rule in India.

History

- The Quit India Movement, also known as the 'Bharat Chodo Andolan', 'August Movement', or 'August Kranti', unfolded during the height of World War II on August 8, 1942.
- The movement was launched by the Indian National Congress (INC) at Gowalia Tank Maidan also known as August Kranti Maidan in Bombay (now called Mumbai) Under the leadership of Mahatma Gandhi, India embarked on a journey of civil disobedience against the British colonial rule.
- The movement called for "an orderly British withdrawal" from India, and its slogan was "Do or Die."
- Gandhi's call for the British to "Quit India" and leave the governance of the country to Indians gained massive support from across the country.
- However, the British colonial government responded with a swift crackdown and started 'Operation Zero Hour' to arrest the leaders of the Quit India Movement and arrested many Congress leaders and activists, and also all the Congress's offices across the country were raided.
- According to several reports, about 100,000 people were arrested and imprisoned for long periods of time, around 1000 people were killed, and over 2,500 reported injuries during the Quit India Movement.
- The outcome of the Quit India Movement was a mix of immediate repression and long-term impact.
- The British authorities quickly suppressed the movement, imprisoning leaders like Mahatma Gandhi, Jawaharlal Nehru, and other prominent Congress members.
- The movement's violent suppression resulted in numerous deaths and arrests.
- After the long struggle, the Quit India Movement played a very crucial role in accelerating the process of India's freedom.
- It signaled a growing sense of unity and determination among Indians to free themselves from British rule.
- The movement also contributed to the weakening of the British Empire's hold on India, as well as highlighting the need for a post-war reevaluation of colonial policies.
- The end of World War II in 1945 and the subsequent political changes on the global stage further hastened the decolonisation process.
- The Quit India Movement's resilience and the sacrifices made by freedom fighters added to the momentum of the broader Indian freedom struggle, eventually leading to India's independence on August 15, 1947.

Key significances of the Quit India Movement

- The Movement united the Indian people in their fight against British rule.
- The Movement showed the British that the Indian people were determined to achieve their freedom.
- The Movement led to the emergence of a new generation of leaders who would go on to play a key role in India's independence.
- The Movement helped to galvanize Indian public opinion in favor of independence.
- The Movement showed growing discontent and impatience with British promises of self-rule.
- The movement inspired a sense of national unity and played a crucial role in India's path to independence.

Important Facts about Quit India Movement

- 1) **Gandhi's Call for Quit India:** On August 8, 1942, During the Bombay session of the All-India Congress Committee (INC), Mahatma Gandhi delivered his famous "Do or Die" speech, setting the stage for the Quit India Movement. His words galvanised the entire nation, encouraging them to rise up against British colonial oppression.
- 2) **Massive Civil Disobedience:** The movement saw widespread participation across the country from students, laborers, farmers, and professionals, all of whom protested through peaceful means. The people of India united under a common goal, proving the potency of nonviolent resistance.
- 3) **Repression and Sacrifice:** The British colonial authorities responded with brutal force, arresting thousands of protestors, including prominent leaders like Gandhi himself. Many activists were subjected to inhumane treatment and torture. The sacrifices made during this movement serve as a poignant reminder of the lengths people were willing to go for freedom.
- 4) **Role of Women:** Women played a vital role in the Quit India Movement, displaying immense courage and leadership. The movement's emphasis on nonviolence and inclusivity allowed women to participate actively, fostering a more equitable society in the process.
- 5) **Global Impact:** The Quit India Movement resonated beyond India's borders, garnering international attention and support. It highlighted the moral bankruptcy of colonialism and bolstered the global movement against oppression and imperialism.
- 6) **Educational and Cultural Upliftment:** The movement emphasized the importance of education and culture in shaping the nation's identity. Several educational institutions and cultural centers were established during this period to promote Indian heritage and values.

Event	Quit India Movement Day, August Movement or August Kranti, or Bharat Chhodo Andolan
Quit India Movement start date	August 8, 1942
Place	August Kranti Maidan in Bombay (now called Mumbai)
When Quit India Movement end?	in 1944
When observed in 2023?	Tuesday, August 8, 2023
Purpose	The event is observed annually to pay tribute to the efforts and dedication of freedom fighters of India who participated in the Quit India Movement launched by Mahatma Gandhi on August 8, 1942.

Hmar community

Why in News

- Hmar Inpui, the apex tribal body of the Hmar community, recently asked the Centre to expedite the processes of resolving the demands of the tribal communities in the form of separate administration for the Kuki/Hmar/Zomi.

Important Points

- Hmar tribe, also called Mhar or Mar, are the dwellers of the North Eastern Part of India.
- They inhabit the northeastern states of Manipur, Assam, Mizoram, Meghalaya and Tripura.
- The Hmars belong to the Chin-Kuki-Mizo group of tribes and are recognised as Scheduled Tribe under the Constitution of India.



Origin

- Hmar Tribes claim their origin from the Singlung, which is located in central or south-west China.
- The ancestors of Hmar belong to the Chinese dynasty. They are found in the Rippaimukh area, Jiribam and Khuga areas and Churachandpur area of Manipur.

- Hmar tribes mostly reside in the southern area of Manipur, especially in the districts of Churachandpur and its neighbouring regions.

Clans

- The Hmar society is based on clan system.
- Each clan had a dialect of its own, though nowadays a common dialect used by the Hmar People was developed by Christian missionaries.
- The chief of the village council is called "Lal". Everybody follows his leadership and directive.

Society

- The society is patrilineal and patriarchal in nature.
- Father is the head of the family. Joint family is common among them.
- The clan is not exogamous in Hmar society.
- They practice both inter-clan and intra-clan marriage.
- Hmars built their villages on hill -tops & houses are constructed on wooden planks.

Economic Life

- The Hmar tribes depend on forest products.
- Shifting cultivation is the main and traditional occupation and blacksmith, carpentry, poultry, basketry, priesthood, herbal medicine are subsidiary occupation.

Yelagiri Hut Shelters

Why in News

- More than two centuries ago, over 200 Malaiyali tribes people built traditional clay huts on the flat peak of the picturesque Yelagiri hill in what is now northern Tamil Nadu.

Important Points

- The Malaiyali tribe, derived from "malai" (hill) and "yali" (people), inhabited Tamil Nadu's hilly regions as foragers.
- They settled in Yelagiri's upper Nillavur region, transitioning from makeshift huts to permanent structures made of red loam clay.
- Simple one-room huts, measuring 16 by 22 feet, were constructed using red clay and teak wood frames.
- These one-room homes were built with teak wood frames covered in red clay, with a distinctive 12-foot thatched roof made of bamboo leaves and cow dung wax to withstand the monsoons.
- Despite the modest appearance, these houses accommodated eight individuals and featured an attic (paran) for storing household items.
- Elevated on teak wood stilts to deter flooding and rodents, these homes also represented agricultural reverence, as grains occupied dedicated spaces.
- They employed science to build these houses that remained unaffected come rain, sun, or storm. At the same time, the stilts provided extra storage space under the house that could be used for grains or even poultry.
- Today, all that remains in the hut is a three-foot-long munn paanai (clay pot) and the remnants of a straw attic that once held an entire year's worth of grains and seeds.



Significance of Red Clay and Hut Construction

- Red clay played a crucial role in the tribe's life cycle, used for hut construction and burial rituals.
- Govinthasamy, a tribesman and former panchayat member, owns and maintains the last remaining traditional hut.
- The hut is constructed with a teak wood frame covered with red clay, featuring a distinctive four-foot-tall entrance.

About Malaiyali Tribe

- The Malaiyali tribe – malai meaning “hill” and Yali meaning “people” is strewn across the Eastern Ghats in North Tamil Nadu.
- They are usually hill farmers and they cultivate different types of millet.
- They are believed to have ancestral connections to the Vellala caste of cultivators.
- According to historical accounts, around ten generations ago, there was a migration from the sacred city of Kanchi to the hills of their present-day region. This period coincided with the dominance of Muslim rulers in Southern India.
- They are the largest Scheduled Tribe in Tamil Nadu, with a population of around 358,000.

They are divided into three groups

- the Periya Malaiyalis ("big" Malayalis) who live in the Shevaroyis,
- the Nadu Malaiyalis ("middle" Malayalis) from the Pachaimalais, and
- the Chinna Malaiyalis ("small" Malayalis) from the Kollaimalais.

One District One Product Wall

Why in News

- The One District One Product (ODOP) initiative has collaborated with the Deendayal Antyodaya Yojna - National Rural Livelihoods Mission (DAY-NRLM) to unveil the captivating ‘ODOP Wall’ in a bid to showcase India’s diverse and exceptional craft heritage.

Important Points

- In a significant stride towards showcasing the rich heritage of Indian craftsmanship and fostering self-reliance, the One District One Product (ODOP) program has joined hands with the Deendayal Antyodaya Yojana – National Rural Livelihoods Mission (DAY-NRLM) to launch the captivating and innovative ‘ODOP Wall’.
- This initiative not only celebrates India’s artistic diversity but also amplifies the voices of rural artisans and women entrepreneurs, providing them with a platform to showcase their exceptional skills and craftsmanship to the world.



One District One Product wall

- The One District One Product (ODOP) program is an initiative under the Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry,
- Under this Collaboration- products are being identified from all districts to be promoted for their unique qualities and cultural significance which include various handicrafts, handloom, and agricultural products that have been associated with the identity of their place of origin.
- Objectives of ODOP: To help districts reach their full potential, foster economic and socio-cultural growth, and create employment opportunities, especially, in rural areas.
- This initiative aims to turn every district in India, into an export hub through promotion of the product in which the district specialises.
- The initiative plans to accomplish this by scaling manufacturing, supporting local businesses, finding potential foreign customers and so on, thus helping to achieve the ‘Atmanirbhar Bharat’ vision.

DAY-NRLM

- It is one of the flagship poverty alleviation program.
- It aims at creating efficient and effective institutional platforms for the rural poor, enabling them to increase household income through sustainable livelihood enhancements and improved access to financial services.

Features

- Universal Social Mobilisation: At least one woman member from each identified rural poor household, is to be brought under the Self Help Group (SHG) network in a time bound manner.
- Participatory Identification of Poor (PIP): All households identified as poor through the PIP process is the NRLM Target Group and is eligible for all the benefits under the programme.
- Community Funds as Resources in Perpetuity: NRLM provides Revolving Fund (RF) and Community Investment Fund (CIF) as resources in perpetuity to the institutions of the poor, to strengthen their institutional and financial management capacity.

Likaru-Mig La-Fukche Road

Why in News

- Border Roads Organisation (BRO) recently started the construction of the Likaru-Mig La-Fukche road close to Hanle in Eastern Ladakh's Demchok sector.

Important Points

- In yet another infrastructure endeavour by India, the Border Roads Organisation (BRO) has begun the construction of a high-altitude road in Ladakh which is set to become the world's highest motorable road pass, breaking its own previous record.
- The construction began on India's 77th Independence Day, in Ladakh region's Demchok area.
- The infrastructure on the LAC is crucial and holds significance for security reasons due to the ongoing standoff with China over border dispute.
- It is located close to Hanle in Eastern Ladakh.
- The 64-km long road will connect Likaru to Fukche, situated 3 km from the Line of Actual Control (LAC).
- Once completed, it will be the world's highest motorable road at a height of 19,400 ft in Mig La.
- This would also provide an alternate land connectivity route to the Fukche advanced landing pad, which is only 2.5 km away from the LAC.
- It is the first project in India to be carried out entirely by an All Woman Road Construction Company. It is led by a five-member All Woman Border Road Task Force.
- The current record holder is of the highest motorable road in the world Umling La road in Ladakh at a height of 19,024 feet, also made by the BRO.
- The 52-km road that connects Chishumle to Demchok, which is right on the Line of Actual Control (LAC), the contested border between India and China.



Umling La Pass

- Currently, Umling La in Ladakh, at a height of 19,024 ft, holds the record of being the highest motorable road in the world.
- The construction of this road has been achieved by the BRO (Border Road Organization) as part of "Project Himank".
- It is a 52-km road that connects Chishumle to Demchok villages. Both these villages lie in close proximity to the Line of Actual Control (LAC), and a friction point between India and China.

India-China border tensions

- The construction of the Likaru-Mig La-Fukch also began at a time when India and China have been locked in a military standoff along the LAC, in the Ladakh sector for more than three years now.
- The talks were held to resolve the issues at Depsang Plains and CNN Junction near Demchok – the remaining friction points between the two sides.
- It also comes days after the 19th round of the China-India Corps Commander Level Meeting took place at the Chushul-Moldo border meeting point in the Leh district of Ladakh, a Union Territory of India.

Kalka-Shimla Railway Line

Why in News

- Heavy rain and floods in Himachal Pradesh have battered the 94-km-long Kalka-Shimla railway line, a UNESCO World Heritage Site.

Important Points

- This railway was declared a UNESCO World Heritage Site on July 8, 2008.
- It is located at an elevation of 2,152 ft above sea level in Haryana, to the capital of Himachal Pradesh, at 6,808 ft.
- The narrow gauge “toy train” passes through 18 stations, 102 tunnels, and over 988 bridges.
- It offers majestic views for most of the route. Passengers see breathtaking valleys, covered with pine, oak, and deodar trees.
- The 94-km long Shimla-Kalka Railway track was laid by the Britishers in tough hilly terrain with 103 tunnels, 800 bridges, 919 curves along with negotiable gradients.
- The track now has 102 tunnels after the collapse of its 46th tunnel, gains an altitude of about 1,590 metres and is considered an engineering marvel.



Key facts about UNESCO

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

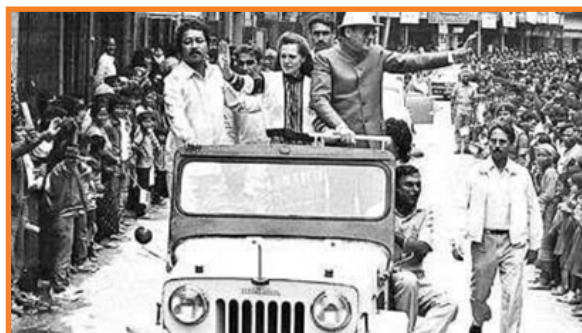
Operation Jericho

Why in News

- The use of air power in Mizoram in 1966 has become a hot topic of discussion after Prime Minister mentioned it in the Lok Sabha while replying to the no confidence motion.

Important Points

- In 1966, a separatist movement led by Mizo National Front (MNF) was gathering steam in Mizoram, and then referred to as the Mizo Hills.
- The Centre had decided to station another Assam Rifles battalion in the Hills, in addition to the one Assam Rifles battalion and a few BSF companies already present.
- Incensed at this, the MNF leadership decided to launch ‘Operation Jericho’ to take control of Aizawl, the biggest town in the region, and then the entire Mizo hills.
- They overran Aizawl in a few days’ time.



- Operation Jericho had been described by a military writer as a “masterstroke” with “near complete military preparation”, amounting to an expression of confidence and clinical planning not witnessed hitherto fore in the Indian subcontinent.

Government's response

- The Mizo rebels had besieged the HQs of 1 Assam Rifles, where the Deputy Commissioner had taken refuge, and released all prisoners from the local jail.
- There was widespread looting of arms and cash from the government treasury.
- Proclamations of independence were made and a demand raised for the Assam Rifles to surrender.
- In response, attempts were made to re-supply the Assam Rifles battalion with helicopters, but these were shot at by the Mizo rebels.
- As the Army struggled to dislodge the rebels, the Air Force was called in.
- The air attack helped the Army regain control of vast areas that had been declared “independent”.
- By the end of the month, aided by the air operations, the army had regained control of Mizoram.

Maharaja Bir Bikram Bahadur

Why in News

- The Prime Minister, Shri Narendra Modi paid tributes to Maharaja Bir Bikram Manikya Bahadur on his 115th birth anniversary.

Important Points

- Maharaja Bir Bikram Manikya Bahadur, born on August 19, 1908, was a prominent royal figure who played a pivotal role in the modernization and development of the princely state of Tripura.
- His reign marked a transformative period in Tripura's history, characterized by progressive reforms and visionary initiatives.
- Bir Bikram Kishore Manikya Debbarma, later known as Maharaja Bir Bikram Manikya Bahadur, was born into the royal family of Tripura.
- Educated at Mayo College in Ajmer, Rajasthan, and Harrow School in England, his diverse educational experiences influenced his forward-thinking mindset.



Education

- Maharaja Bir Bikram recognized the importance of education in societal progress.
- He established the Maharaja Bir Bikram College (MBB College) in Agartala, aimed at providing quality education to his subjects. This institution continues to contribute to Tripura's educational landscape.

Infrastructure

- Under his leadership, significant infrastructure projects were undertaken.
- Road networks, bridges, and public buildings were constructed to enhance connectivity and elevate living standards across the state.

Healthcare

- Understanding the significance of healthcare, he established hospitals and medical facilities, ensuring accessible and quality medical services for the people of Tripura.
- This initiative contributed to improved healthcare outcomes.

Administrative Efficiency

- Maharaja Bir Bikram introduced administrative reforms to enhance governance and efficiency.
- His administration focused on inclusive policies that aimed at the welfare and upliftment of the people.

Cultural Preservation

- While driving modernization, the Maharaja also emphasized the preservation of Tripura's cultural heritage.
- He supported local arts, crafts, and traditions, ensuring that the state's identity remained intact.

Megalithic site

Why in News

- A large number of megalithic hat stones were found from a single site during a recent archaeological salvage excavation conducted by the Kerala State Archaeology Department at Nagaparamba in Kuttippuram village, near Tirunavaya.

Important Points

- Hat stones, popularly called Thoppikkallu in Malayalam, are hemispherical laterite stones used as lids on burial urns during the megalithic period.
- The discovery at Nagaparamba could arguably be the largest number of hat stones in an unprotected site in the State.
- The team salvaged numerous earthen urns and iron implements with unique features, which could throw light on the life and culture of people who lived in those parts over 2,000 years ago.



About Megaliths

- Megaliths means large stones that represent the megalithic period, which lasted from 2500 BC to AD 200.
- It has been used to construct a prehistoric structure or monument, either alone or together with other stones.
- These were constructed either as burial sites or commemorative (non-sepulchral) memorials.
- In India, megaliths are concentrated in the states of Maharashtra (mainly in Vidarbha), Karnataka, Tamil Nadu, Kerala, Andhra Pradesh and Telangana.

Megalithic monuments in Kerala

- The megalithic monuments discovered in the state are considered to be remnants of the Iron Age.
- Different types of clay utensils, pots, clay plates, cheppus (cheppu means a small container), iron weapons like sword, knife, soolam (trident), nail, choonda (fishing hook) and kozhunaaku are the major megalithic remnants found in Kerala.
- The megalithic remnants in the state were discovered in burial sites.

The megalithic burial sites found in the State fall in the following categories :

- hood stones (kudakkallu),
- hat stones (thoppikkallu),
- muthumakkathazhi (nannangadi),
- muniyara,
- pandavakuzhi,
- kalmesha,
- kalvrithangal and
- nadukallu.
- Dolmenoid cists are where dead bodies were buried.
- They will be moodukallu (stone slab) with a hole.
- The 'Kalmesha' or 'Meshakallu' (capstone flush) is another type in which a flat stone with a hole is placed over the large clay pot in which the corpse is kept.
- The 'kalvritham' (stone circle) is a kind of burial system in which the corpse is left to be fed by birds, animals and for decaying in the earth.

The ancient text Manimekhala describes these kinds of burials :

- those who burn,
- those who leave the body for the birds to feed,
- those who bury
- those who bury the corpse in clay pots.

Chapter
2

Polity & Governance

Registration Of Births And Deaths (Amendment) Bill

Why in News

- Recently Lok Sabha passes bill that will enable digital birth certificates.

Important points

- The Lok Sabha passed the Registration of Births and Deaths (Amendment) Bill, 2023 that paves the way for digital birth certificates which will be a single document to be used for admission to educational institutions, applications for driving licences, government jobs, passports or Aadhaar, voter enrolment, and registration of marriage, among others.
- This will avoid the need for a multiplicity of documents to prove date and place of birth in the country.
- Aadhaar will be necessary to register births (parents) and deaths, according to the proposed legislation.
- The database will also update the National Population Register, ration cards and property registration.
- NPR, first collected data in 2010 and updated in 2015 through door-to-door enumeration. It already has a database of 119 crore residents.
- NPR is the first step to the creation of National Register of Citizens (NRC), per Citizenship Act.
- The bill will help create a database of births and deaths at national and state-level, ensuring transparency in the delivery of public services and social benefits.
- The amendment will help adding the provisions of digital registration and electronic delivery of certificates, ensuring easy registration of births and deaths. This will help in data sharing with other authorities that maintain databases.
- It will also help in issuing passport and Aadhaar number, and avoid multiplicity of documents to prove date and place of birth, according to the government.
- The bill will change ordering authority from first class magistrate to the district magistrate of sub-divisional magistrate in the case of delayed information of any birth or death to the registrar.
- The bill will facilitate the registration process of adopted, orphan, abandoned, surrendered, surrogate child, and child to a single parent or unwed mother.
- Under the proposed legislation, all medical institutions must provide a certificate regarding the cause of death to the registrar and a copy to the nearest relative.
- Special sub-registrars can be appointed for speedy registration of deaths and issue of certificates during disasters or epidemics, according to the bill.
- For birth registration, the bill provides for the collection of Aadhaar numbers of the parents and informants.
- Besides, it also seeks to address the public grievances by an action or order of the registrar or district registrar, and enhance the penalties under the law.



Rohini Commission

Why in News

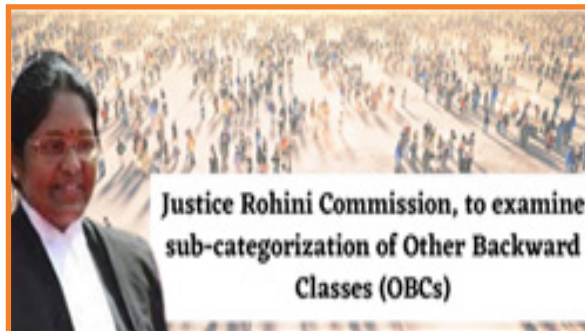
- After 13 extensions, the committee submitted its report on sub-categorisation of OBCs.

Important Points

- The Commission set up to examine the sub-categorisation of Other Backward Classes (OBCs) submitted its report to President Droupadi Murmu on Monday after receiving 13 extensions to its tenure.

OBCs

- The Other Backward Classes (OBCs) are a group of socially and educationally disadvantaged castes in India.
- They constitute a significant portion of the population and have been granted 27% reservation in jobs and education under the central government.
- To ensure equitable distribution of benefits among all OBC communities, the idea of sub-categorization within the OBCs was proposed.
- The Rohini Commission, established in 2017, was tasked with examining this issue.



YET ANOTHER EXTENSION

In the last six years, the Rohini Commission has gotten many extensions – thirteen times in all – around the time of state or parliamentary elections, so that the electoral outcomes are not affected

<p>The panel was to submit its report by January 2, 2018, it has missed several deadlines since then</p> <p>Rohini Commission, set up in 2017, was tasked with forming scientific data on OBC quota redistribution</p>	<p>According to a 2018 report,</p> <h1>37%</h1> <p>of the 2,600 communities in the OBC central list have zero representation in jobs and institutes</p>	<p>It also shows that only 2.68% of reservation has been availed by 994 castes</p> <p>The panel was to submit its report on January 31 following the previous extension</p> <p>Now, panel has till July 31 following the new six month-extension</p>
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Sub-Categorization

- Sub-categorization aims to create sub-groups within the larger OBC community for the purpose of reservation, addressing the issue of some affluent communities securing a major share of the reservation benefits.
- The concept of sub-categorization has also been a subject of legal debate for other reservation categories, such as Scheduled Castes and Scheduled Tribes (SCs and STs).

Findings of the Commission

- Categorisation of Caste Groups:** According to sources, the Commission has suggested breaking the caste groups into broad categories, with the dominant castes (with the most access to benefits) getting the smallest share of the 27% reservation, and the historically crowded-out caste groups getting the largest share of the reservation pie.
- Unequal Distribution:** The Commission’s analysis of 1.3 lakh central jobs and OBC admissions to central higher education institutions over a few years revealed that 97% of all jobs and educational seats were concentrated among just 25% of sub-castes classified as OBCs.
- Dominant Communities:** A significant portion of these opportunities (95%) went to only 10 OBC communities.
- Underrepresented Groups:** Nearly 37% (983) of OBC communities had zero representation in jobs and educational institutions, while 994 OBC sub-castes had a total representation of only 2.68% in recruitment and admissions.

Challenges faced by the G Rohini Commission

- The absence of data on the population of various communities to compare with their representation in jobs and admissions.
- As a result, in December 2018, the commission wrote to the government asking



September 2023

UPSC

- for a budgetary provision for an all-India survey to estimate the population of various OBCs. Later, it decided not to undertake such survey at this stage.
- OBC groups and almost all political parties barring the BJP central leadership have continued to demand a caste census.
- The Bihar legislature has twice unanimously passed resolutions calling for a caste census.
- Recently, Patna High Court dismissed a challenge to the decision of the Bihar government to conduct a caste survey, paving the way for the exercise in the state.

Raisina Dialogue

Why in News

- Foreign Secretary recently told a Parliament committee that the Raisina Dialogue is now among the most significant global level think tank events in the world.

Important Points

About Raisina Dialogue :

- It is India's premier conference on geopolitics and geoeconomics, committed to addressing the most challenging issues facing the global community.
- It is modeled on the lines of the Munich Security Conference and Singapore's Shangri-La Dialogue.
- It is held annually since 2016 in New Delhi.
- The Dialogue is structured as a multi-stakeholder, cross-sectoral discussion involving heads of state, cabinet ministers, and local government officials, who are joined by thought leaders from the private sector, media, and academia.
- It is organized by the Observer Research Foundation (ORF) in partnership with the Ministry of External Affairs, Government of India.

RAISINA DIALOGUE 2023 PILLARS

1. NEO INSURGENCE: GEOGRAPHIES, DOMAINS, AMBITIONS +
2. AMORAL MOSAIC: CONTEST, COOPERATE, OR CANCEL +
3. CHAOTIC CODES: SOVEREIGNTY, SECURITY, SOCIETY +
4. PERNICIOUS PASSPORTS: CLIMATE, COMMONS, CITIZENS +
5. GREY RHINOS: DEMOCRACIES, DEPENDENCIES, AND DEBT TRAPS +

Key Facts about Observer Research Foundation (ORF)

- Established in 1990, the ORF is an independent, nonpartisan think tank that conducts policy research on good governance, foreign policy, and sustainable economic development for India.
- ORF's work spans a wide range of topics, including climate, energy, cyber issues and media, economic development, and national security.
- It provides non-partisan, independent, well-researched analyses and inputs to diverse decision-makers in governments, business communities, academia, and to civil society around the world.
- Mandate: It seeks to lead and aid policy thinking towards building a strong and prosperous India in a fair and equitable world.

Shangri-La Dialogue

- It is Asia's premier defense and security summit.
- It is attended by Defence Ministers, permanent heads of ministries and military chiefs of 28 Asia-Pacific countries.
- It is organized by an independent think-tank, International Institute for Strategic Studies (IISS).
- The summit is named after the Shangri-La hotel in Singapore, where it has been held since 2002.

Preventive Detention

Why in News

- The Kerala High Court has underscored that the power of preventive detention can only be invoked in cases where an individual's activities pose a threat to public order or are detrimental to society.

Important Points

- This ruling was issued in response to the annulment of a detention order under the Kerala Anti-Social Activities (Prevention) Act, 2007 (KAAPA) against an individual who was implicated in three NDPS cases and two Indian Penal Code cases.
- The court emphasised that if the cases highlighted a lack of connection to the 'public order' as envisioned by such detention orders, the detention itself would be unlawful.



What is Preventive Detention ?

- Preventive detention refers to the detention of an individual without a trial or conviction by a court.
- The primary objective of preventive detention is not to punish an individual for a past offence but to prevent them from committing an offence in the future.
- Preventive detention laws are enacted by governments to ensure public safety and maintain social order.

Constitutional Provisions

- Article 22 of the Indian Constitution grants protection to individuals who are arrested or detained.
- It has two parts—the first part deals with cases of ordinary law, which includes situations where an individual is detained as part of a criminal investigation.
- The second part deals with cases of preventive detention law, which pertains to the detention of individuals without a trial or conviction.
- Article 22 (4) states that no law providing for preventive detention shall authorise the detention of a person for a longer period than three months unless an Advisory Board reports sufficient cause for extended detention.
- The detainee is entitled to know the grounds of his detention. The state, however, may refuse to divulge the grounds of detention if it is in the public interest to do so.
- The detaining authorities must give the detainee earliest opportunities for making representation against the detention.

Who can make laws under Preventive Detention ?

- Parliament has the exclusive power to enact a law for preventive detention for the reasons connected with defence, foreign affairs, or security of India.
- Both Parliament and State Legislature have powers to enact a law for preventive detention for the reasons related to the maintenance of public order or the maintenance of supplies or services essential to the community.

Laws that provide for Preventive Detention

- In India, various laws provide for preventive detention, including the National Security Act (NSA) of 1980, the Unlawful Activities (Prevention) Act (UAPA) of 1967, and state-specific laws like the Maintenance of Internal Security Act (MISA) and the Public Safety Acts (PSA) in certain states.
- Under these laws, authorities can detain an individual for a specific period, typically up to 12 months, without presenting formal charges or conducting a trial.
- The detention order is issued by a designated authority or government official and is subject to periodic review by an advisory board.

Preventive Detention Laws in India

- Parliament passed a legislation named Preventive Detention Act, 1950 which talks about the detention of a person on the grounds of defense, foreign affairs or the security of the state.
- The constitutionality of Preventive Detention Act, 1950 was challenged in the case of A.K. Gopalan V. State of Madras where a leader named A.K. Gopalan was detained in Madras jail from 1947.
- He challenged the validity of the aforesaid act as this act of state of further detaining him is in violation of

Articles 13, 19 and 21 and provisions of the act are not in accordance with Article 22 enshrined under the Constitution of India.

- The case was decided by 4:1 ratio, where the majority does not recognize detention as an infringement of personal liberty under Article 21.
- Minority view in the case: Preventive detention, which is dealt with in Article 22, also amounts to deprivation of personal liberty which is referred to in Article 21, and is a violation of the right of freedom of movement dealt with in Article 19(1)(d).
- The interrelationship between fundamental rights paved the way for acknowledging privacy as a fundamental right in Justice K.S. Puttaswamy case by overruling MP Sharma and Kharak Singh case.

Employees State Insurance (ESI) Scheme

Why in News

- The Employees' State Insurance Corporation (ESIC) added 20.27 lakh new members under the Employees State Insurance Scheme in June.

Important Points

- It is a social security scheme offered by the Government of India as per the Employees' State Insurance Act, 1948.
- It is administered by a statutory corporate body called the Employees' State Insurance Corporation (ESIC)
- The scheme provides protection to employees against disablement/death due to employment injury, sickness, and maternity.



Employees' State Insurance Scheme (ESIC)

Applicability

- The ESI Scheme applies to factories and other establishment's Road Transport, Hotels, Restaurants, Cinemas, Newspaper, Shops, and Educational/Medical Institutions wherein 10 or more persons are employed.
- However, in some States threshold limit for coverage of establishments is still 20.
- It is the employer's legal responsibility to register their factory/ establishment under the ESI Act within 15 days of its applicability to them.

Wage Limit

- The existing wage limit for coverage under the Act is Rs.21,000/- per month (25000/- per month in the case of Persons with Disability).
- It is the employer's responsibility to enroll eligible employees in the ESI program.

How are contributions made ?

- This is a self-financing scheme, where the employees and the employers make regular monthly contributions to the scheme at a certain percentage of their wages.
- As of now, covered employees contribute 0.75% of the wages, whereas the employers contribute 3.25% of the wages, payable to their employees.
- Employees earning less than Rs. 137/- a day as daily wages are exempted from payment of their share of contribution.
- The State Governments, as per provisions of the Act, contribute 1/8th of the expenditure of medical benefits within a per capita ceiling of Rs. 1500/- per Insured Person per annum.

The main benefits provided under ESI Scheme are

- Sickness Benefit: During medical leave, the scheme offers cash flow during the said period. The worker can avail 70% of the daily wage for a maximum of 91 days. This can be availed in two consecutive periods.
- Disablement Benefit: In case of temporary disablement of the worker, they are eligible for a monthly wage of 90% until they recover. In the case of permanent disability, 90% of the monthly wage can be availed for the entire life.
- Dependants' Benefit: Paid at the rate of 90% of wage in the form of monthly payment to the dependants of a deceased Insured person in cases where death occurs due to employment injury or occupational hazards.
- Maternity Benefit: The beneficiary can avail 100% of the daily wages for up to 26 weeks, which can be extended to a further one month based on the medical advice. In the case of miscarriage, the benefit is 6 weeks, while in

the case of adoption it is 12 weeks.

- Medical Benefit: Under the scheme, the insured's medical expenses are covered through affordable and reasonable healthcare facilities.
- Besides the above, other benefits being provided to the beneficiaries are Confinement Expenses, Funeral Expenses, Vocational Rehabilitation, Physical Rehabilitation, Unemployment Allowance (RGSKY) and Skill Upgradation Training.

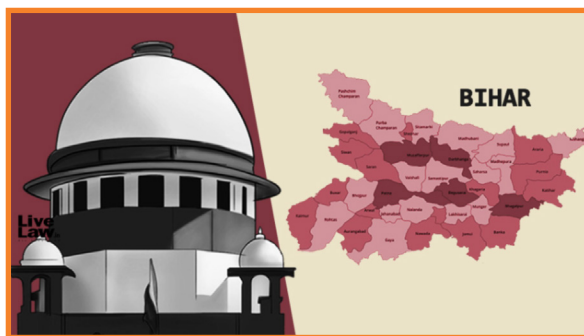
Bihar's caste-based survey and the legal challenges

Why in News

- The Supreme Court is set to hear petition challenging the Patna High Court (HC)'s verdict upholding the Bihar government's ongoing caste survey.

Important Points Caste-Based Survey

- The Bihar State government launched a two-phase caste survey in Bihar, stating that detailed information on socio-economic conditions would help create better government policies for disadvantaged groups.
- The survey is estimated to collect the socio-economic data for a population of 12.70 crore in the 38 districts of Bihar.
- The State was in the middle of the second phase, when the survey was halted due to a stay order from the HC.
- However, a recent HC verdict dismissed all petitions opposing the move, and the government resumed work on the second phase of the survey.
- In the second phase, data related to castes, sub-castes, and religions of all people is to be collected.



Need for a caste census

- The Census conducted at the beginning of every decade does not record any caste data other than for those listed as Scheduled Castes (SCs).
- In the absence of such a census, there is no proper estimate for the population of OBCs, various groups within the OBCs, and others.
- Despite this ambiguity, the Union government has categorically ruled out conducting a socio-economic caste census, saying it is unfeasible, administratively difficult and cumbersome.
- Excluding any castes other than the SCs and Scheduled Tribes was a conscious policy decision adopted since the 1951 Census, and that there was a policy of official discouragement of caste.
- The Union government in 2011 had undertaken a survey of castes through the Socio-Economic and Caste Census of 2011.
- However, the collected raw data of nearly 130 crore Indians was never made public due to flaws in the data.

Reason for challenge

- The petitions in the Supreme Court contend that the State's order notifying the survey is unconstitutional since only the Centre is exclusively authorised to conduct a census under the Constitution.
- They also point out that the State Government does not have any independent power to appoint District Magistrates and local authorities for collating data, without a notification under Section 3 of the Census Act, 1948 by the Centre.
- The HC verdict has also been assailed on the ground that it violates the Puttaswamy judgment as it permits the collection of personal data by the State under an executive order.
- However, the HC had observed that the State is competent to frame a policy for better administration and that the policy is not arbitrary.
- It also dismissed concerns about right of privacy of those surveyed by referring to the triple-test requirements in the Puttasamy judgment.

Digital Personal Data Protection Bill, 2023

Why in News

- The Digital Personal Data Protection Bill, 2023, was passed in the Lok Sabha in a voice vote, amid continuous sloganeering from the Opposition benches.



Important Points

- The Bill sets out requirements for firms collecting data online, with exceptions for the Government and law enforcement agencies.
- The Bill, now headed to the Upper House, also amends the Right to Information Act, 2005 to remove public interest exemptions on disclosing personal information.

Highlights of the Bill

- The Bill will apply to the processing of digital personal data within India where such data is collected online, or collected offline and is digitised. It will also apply to such processing outside India, if it is for offering goods or services in India.
- Personal data may be processed only for a lawful purpose upon consent of an individual. Consent may not be required for specified legitimate uses such as voluntary sharing of data by the individual or processing by the State for permits, licenses, benefits, and services.
- Data fiduciaries will be obligated to maintain the accuracy of data, keep data secure, and delete data once its purpose has been met.
- The Bill grants certain rights to individuals including the right to obtain information, seek correction and erasure, and grievance redressal.
- The central government may exempt government agencies from the application of provisions of the Bill in the interest of specified grounds such as security of the state, public order, and prevention of offences.
- The central government will establish the Data Protection Board of India to adjudicate on non-compliance with the provisions of the Bill.

Key Issues and Analysis

- Exemptions to data processing by the State on grounds such as national security may lead to data collection, processing, and retention beyond what is necessary. This may violate the fundamental right to privacy.
- The Bill does not regulate risks of harms arising from processing of personal data.
- The Bill does not grant the right to data portability and the right to be forgotten to the data principal.
- The Bill allows transfer of personal data outside India, except to countries notified by the central government. This mechanism may not ensure adequate evaluation of data protection standards in the countries where transfer of personal data is allowed.
- The members of the Data Protection Board of India will be appointed for two years and will be eligible for re-appointment. The short term with scope for re-appointment may affect the independent functioning of the Board.

Key Features

- **Applicability** : The Bill applies to the processing of digital personal data within India where such data is : (i) collected online, or (ii) collected offline and is digitised. It will also apply to the processing of personal data outside India if it is for offering goods or services in India. Personal data is defined as any data about an individual who is identifiable by or in relation to such data. Processing has been defined as wholly or partially automated operation or set of operations performed on digital personal data. It includes collection, storage, use, and sharing.
- **Consent** : Personal data may be processed only for a lawful purpose after obtaining the consent of the individual. A notice must be given before seeking consent. The notice should contain details about the personal data to be collected and the purpose of processing. Consent may be withdrawn at any point in time. Consent will not be required for 'legitimate uses' including: (i) specified purpose for which data has been provided by an individual voluntarily, (ii) provision of benefit or service by the government, (iii) medical emergency, and (iv) employment. For individuals below 18 years of age, consent will be provided by the parent or the legal guardian.
- **Rights and duties of data principal** : An individual whose data is being processed (data principal), will have the right to: (i) obtain information about processing, (ii) seek correction and erasure of personal data, (iii) nominate another person to exercise rights in the event of death or incapacity, and (iv) grievance redressal. Data principals will have certain duties. They must not: (i) register a false or frivolous complaint, and (ii) furnish any false particulars or impersonate another person in

specified cases. Violation of duties will be punishable with a penalty of up to Rs 10,000.

- **Obligations of data fiduciaries :** The entity determining the purpose and means of processing, (data fiduciary), must: (i) make reasonable efforts to ensure the accuracy and completeness of data, (ii) build reasonable security safeguards to prevent a data breach, (iii) inform the Data Protection Board of India and affected persons in the event of a breach, and (iv) erase personal data as soon as the purpose has been met and retention is not necessary for legal purposes (storage limitation). In case of government entities, storage limitation and the right of the data principal to erasure will not apply.
- **Transfer of personal data outside India :** The Bill allows transfer of personal data outside India, except to countries restricted by the central government through notification.
- **Exemptions :** Rights of the data principal and obligations of data fiduciaries (except data security) will not apply in specified cases. These include: (i) prevention and investigation of offences, and (ii) enforcement of legal rights or claims. The central government may, by notification, exempt certain activities from the application of the Bill. These include: (i) processing by government entities in the interest of the security of the state and public order, and (ii) research, archiving, or statistical purposes.
- **Data Protection Board of India :** The central government will establish the Data Protection Board of India. Key functions of the Board include: (i) monitoring compliance and imposing penalties, (ii) directing data fiduciaries to take necessary measures in the event of a data breach, and (iii) hearing grievances made by affected persons. Board members will be appointed for two years and will be eligible for re-appointment. The central government will prescribe details such as the number of members of the Board and the selection process. Appeals against the decisions of the Board will lie with TDSAT.
- **Penalties :** The schedule to the Bill specifies penalties for various offences such as up to: (i) Rs 200 crore for non-fulfilment of obligations for children, and (ii) Rs 250 crore for failure to take security measures to prevent data breaches. Penalties will be imposed by the Board after conducting an inquiry.

Development of data protection legislations in India

- The Supreme Court of India has established the right to privacy and data protection as a fundamental right in the case of Justice K.S. Puttaswamy (Retd.) v. Union of India (2017), and the present legislative framework for privacy outlined in the Information Technology Rules, 2011 (IT Rules, 2011) which governs the “collecting, receiving, possessing, storing, dealing, handling, retaining, using, transferring, disclosing sensitive personal data or information, security practices and procedures for handling personal information”.
- However this provision is considered to be insufficient as it fails to address among other issues, the misuse of data collected from children, breaches of data by corporations outside India and the limited scope of the definition of sensitive data.

It was insufficient on four levels

- First, the existing model assumed that privacy is a statutory right rather than a fundamental one and does not apply to the state’s processing of individual data.
- Second, it understood only a few data types that must be shielded.
- Third, it imposed few responsibilities on data controllers, which can also be waived by contract.
- Fourth, there were few punishments for the violators.

Ragging regulations in India

Why in News

- An 18-year-old undergraduate student died after falling from the second floor of his hostel in Kolkata allegedly due to ragging.

Important Points

- A first-year student of Jadavpur University in Kolkata died after allegedly falling from the second-floor balcony of his hostel where he was staying since last week.
- The university formed a seven-member internal committee to probe the death.

Supreme Court on ragging

- The Supreme Court defined ragging in the Vishwa Jagriti matter (1999) as, "Any disorderly conduct whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rudeness any other student, indulging in rowdy or undisciplined activities which causes or is likely to cause annoyance, hardship or psychological harm or to raise fear or apprehension thereof in a fresher or a junior student or asking the students to do any act or perform something which such student will not in the ordinary course and which has the effect of causing or generating a sense of shame or embarrassment so as to adversely affect the physique or psyche of a fresher or a junior student."

- The Supreme Court in a 2001 case had dealt with ragging, which it termed the menace pervading the educational institutions of the country.
- The Court also issued key guidelines on anti-ragging.
- These included setting up proctoral committees to prevent ragging and internally address complaints against ragging.



According to the UGC Regulation on Curbing the Menace of Ragging in Higher Institutions, 2009, ragging constitutes one or more of any of the following acts :

- Any conduct by any student or students whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rudeness a fresher or any other student.
- Indulging in rowdy or undisciplined activities by any student or students which causes or is likely to cause annoyance, hardship, physical or psychological harm or to raise fear or apprehension thereof in any fresher or any other student.
- Asking any student to do any act which such student will not in the ordinary course do and which has the effect of causing or generating a sense of shame, torment or embarrassment so as to adversely affect the physique or psyche of such fresher or any other student.
- Any act by a senior student that prevents, disrupts or disturbs the regular academic activity of any other student or a fresher.
- Exploiting the services of a fresher or any other student for completing the academic tasks assigned to an individual or a group of students.
- Any act of financial extortion or forceful expenditure burden put on a fresher or any other student by students
- Any act of physical abuse including all variants of it: sexual abuse, homosexual assaults, stripping, forcing obscene and lewd acts, gestures, causing bodily harm or any other danger to health or person;
- Any act or abuse by spoken words, emails, posts, or public insults would also include deriving perverted pleasure, and vicarious or sadistic thrill from actively or passively participating in the discomfiture to fresher or any other student.
- Any act of physical or mental abuse (including bullying and exclusion) targeted at another student (fresher or otherwise) on the ground of colour, race, religion, caste, ethnicity, gender (including transgender), sexual orientation, appearance, nationality, regional origins, linguistic identity, place of birth, place of residence or economic background.

UGC guidelines

- In 2009, the UGC issued detailed guidelines for universities on anti-ragging.
- The guidelines include nine explanations of what could constitute ragging.
- At an institutional level, the UGC requires universities to take measures for prevention of ragging including declaring its intent publicly to prevent ragging and requiring students to sign an undertaking that they will not engage in ragging activities.
- The institution shall set up appropriate committees to actively monitor, promote and regulate healthy interaction between the freshers, junior students and senior students.
- If found guilty by the anti-ragging committee, the UGC guidelines require any member of the committee to proceed to file a First Information Report (FIR), within twenty four hours of receipt of such information or recommendation.

Under IPC

- While ragging is not a specific offence, it could be penalised under several other provisions of the Indian Penal Code.
- The offence of wrongful restraint is criminalised under Section 339 of the IPC which is punished with simple imprisonment and/or fine.
- Wrongful restraint is an offence when a person is prevented from proceeding in any direction in which that person has a right to proceed.
- Section 340 criminalises wrongful confinement which is defined as wrongfully restraining any person in such a manner as to prevent that person from proceedings beyond certain circumscribing limits.
- This is punishable with a jail term and/or a fine.

Chapter
3

Environment & Ecology

Himalayan Vultures

Why in News

- Rescued Himalayan vultures script India's first captive breeding success story in Assam Zoo

Important Points

- The Assam State Zoo recently recorded the breeding of a Himalayan Vulture in captivity for the first time in India. Details of the successful breeding were recently published in a paper titled 'Breeding of Himalayan Vulture *Gyps himalayensis* Hume, 1869 in the Assam State Zoo, Guwahati, Assam.
- The species categorised as 'Near Threatened' with an estimated population of 66,000, witnessed a significant moment of hope in their conservation journey.



Conservation of Himalayan Vulture

- The ground-breaking captive breeding of the Himalayan Vulture was recorded on 14th March, 2022, at the Assam State Zoo, making a significant achievement for wildlife preservation. These Vultures, which are native to the high Himalayas, were rescued from various poisoning and accident incidents in 2011-2012. The successful breeding comes as a dedicated effort to create a suitable environment for the birds and acclimate them to the tropical conditions of the zoo.

Challenges

- Breeding the Himalayan Vulture in Guwahati was a challenging task as this species breeds in snow-clad mountains. However, with the passage of time, the vulture adapted to the zoo's tropical surroundings. Researchers provided necessary care, created artificial brooding facilities with precise temperature and feeding schedules, to ensure the successful hatching and rearing of the nestling.

Significance

- The successful breeding of Himalayan Vulture at the Assam State Zoo is the second instance in the world, after France, where these vultures have been bred in captivity. This accomplishment underscores the significant role of zoos and breeding centres in conservation efforts, particularly for endangered species like vultures.

Efforts for Conservation of Vulture's Population

- Vulture population have experienced drastic declines in recent years, leading to 'Critically Endangered' status for three resident Gyps vulture species.
- The conservation breeding centres at four locations, including the Vulture Conservation Breeding Centre at Rani, Assam playing a pivotal role in augmenting vulture populations.
- With 39 White-rumped vultures released into the wild from the VCBC in Haryana and West Bengal, researchers and conservationists are closely monitoring their progress through transmitters. This monitoring helps track the vultures' movements and behaviour, further informing conservation strategies.

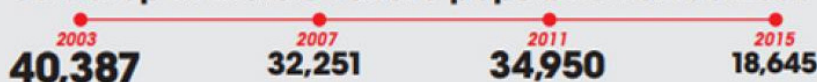
Reason for decline

- The cause of the decline was established as diclofenac, a veterinary nonsteroidal anti-inflammatory drug (NSAID) in 2004, which is used to treat pain and inflammatory diseases such as gout in carcasses that vultures would feed off.

VANISHING VULTURES

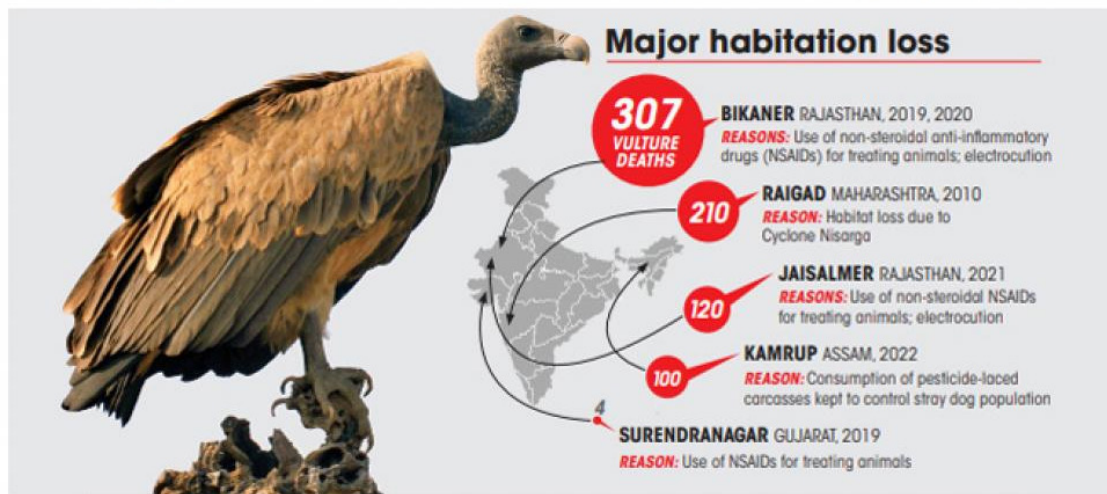
High mortality hinders India's plans of stabilising its vulture population

53% drop in India's vulture population since 2003



The fatal four

Drug	Effect
DICLOFENAC	was banned for veterinary use in 2006 to arrest the shrinking vulture population
ACECLOFENAC	gets converted into diclofenac within hours of administration to cattle
NIMESULIDE	causes visceral gout and renal failure in vultures within 30 hours of ingestion
KETOPROFEN	causes death in vultures within 48 hour after ingestion due to heightened toxicity levels



- Just 0.4-0.7% of animal carcasses contaminated with diclofenac was sufficient to decimate 99% of vulture populations.
- The MoEFCC released the Action Plan for Vulture Conservation 2006 with the Drugs Controller General of India (DCGI) banning the veterinary use of diclofenac in the same year.

Vulture Conservation Initiatives :

International

- SAVE (Saving Asia's Vultures from Extinction)
- The consortium of like-minded, regional and international organizations, created to oversee and coordinate conservation, campaigning and fundraising activities to help the plight of south Asia's vultures.
- Objective: To save three critically important species from extinction through a single programme.
- SAVE partners: Bombay Natural History Society, Bird Conservation Nepal, RSPB (UK), National Trust for Nature Conservation (Nepal), International Centre for Birds of Prey (UK) and Zoological Society of London.

Indian

- The Central Zoo Authority (CZA) and Bombay Natural History Society (BNHS) also established the Vulture Conservation Breeding Programme.
- A Vulture Care Centre (VCC) was set up at Pinjore, Haryana in 2001 to study the cause of deaths of vultures in India.
- The Jatayu Conservation Breeding Centre in Pinjore is the world's largest facility within the state's Bir Shikargah Wildlife Sanctuary for the breeding and conservation of Indian vulture species.

National Action Plan for Vulture Conservation, 2020-2025

- It was adopted at the Conservation of Migratory Species (CMS) held in 2017. The first strategy of the plan was launched at the CMS COP 13 held in Gandhinagar, Gujarat, India.

The major objectives of the plan are as follows

- To reduce mortality caused due to unintentional toxic substances



- To reduce mortality due to NSAID.
- To halt the trade of vulture parts
- To stop poisoning by poacher.
- A National vulture Task Force is to be created in every member country. This task force shall help the respective governments to address the threats to vultures in their respective countries.
- The report of success of the project is to be created in 2029.

Perseid Meteor Shower

Why in News

- The NASA All Sky Fireball Network is already detecting the first meteors of this year's Perseid meteor shower

Important Points

- A meteor is a space rock that comes into Earth's atmosphere.
- As it falls, the air makes it really hot because of the friction.
- The bright streak we see is not the rock itself, but the hot air around it.
- When many space rocks hit the atmosphere over Earth together, we call it a meteor shower.
- These meteors travel at incredible speeds, reaching tens of thousands of kilometers per hour before disintegrating due to the intense heat generated by friction with the atmosphere.



About Perseid Meteor Shower

- It is one of the most popular and well-known meteor showers that occurs annually.
- It usually takes place in August, specifically around August 11th to August 12th.
- These meteors are fast and bright, leaving trails of light and color behind them as they move through the sky.
- During the Perseids, you can see around 50 to 100 meteors every hour.
- They usually show up when the weather is warm and the nights are comfortable for watching the sky.
- The Perseids are special because they often generate fireballs.
- Fireballs are big bursts of light and color that last longer than a regular shooting star.
- This happens because fireballs come from larger pieces of material from comets.

Endemic Birds of India

Why in News

- 5% of birds in India are endemic, reveals Zoological Survey of India publication

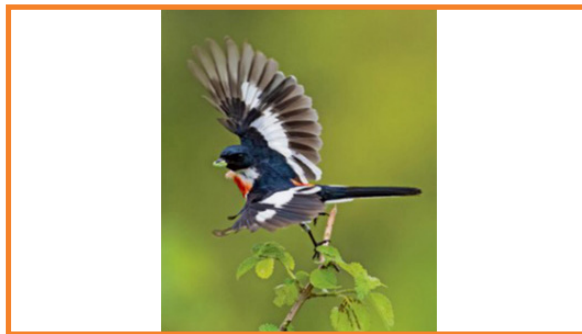
Important Points

- A recent publication by the Zoological Survey of India (ZSI) points out that about 5% of birds found in the country are endemic and are not reported in other parts of the world.
- The publication, titled 75 Endemic Birds of India, was recently released on the 108th foundation day of the ZSI.
- The publication points out that the 75 bird species belong to 11 different orders, 31 families, and 55 genera, and exhibit remarkable distribution patterns across various regions in India.

Key findings

- India is home to 1,353 bird species, which represents approximately 12.40% of global bird diversity. Of these 1,353 bird species, 78 (5%) are endemic to the country.
- Three endemic species- Manipur Bush Quail (*Perdica manipurensis*), Himalayan Quail (*Ophrysia superciliosa*) and Jerdon's Courser (*Rhinoptilus bitorquatus*) not recorded in last few decades.
- Three species- Himalayan Quail; Jerdon's Courser and Bugun Liocichla (*Liocichla bugunorum*)- are classified as 'Critically Endangered' by IUCN.

- Highest number of endemic species have been recorded in Western Ghats including Malabar Grey Hornbill (*Ocyyceros griseus*)
- Malabar Parakeet (*Psittacula columboides*); Ashambu Laughing Thrush (*Montecincla meridionalis*); White-bellied Sholakili (*Sholicola albiventris*) etc.
- Several species are endemic to Andaman and Nicobar Islands such as Nicobar Megapode (*Megapodius nicobariensis*); Nicobar
- Serpent Eagle (*Spilornis klossi*); Andaman Crake (*Rallina canningi*); and Andaman Barn Owl (*Tyto deroepstorffi*).
- Four species of birds are endemic to Eastern Himalayas, and one each to Southern Deccan plateau and central Indian forest.
- The highest number of endemic species have been recorded in the Western Ghats, with 28 bird species.
- Some of the interesting species recorded in the country's bio-geographic hotspot are the Malabar Grey Hornbill (*Ocyyceros griseus*); Malabar Parakeet (*Psittacula columboides*); Ashambu Laughing Thrush (*Montecincla meridionalis*); and the White-bellied Sholakili (*Sholicola albiventris*).
- 25 bird species are endemic to the Andaman and Nicobar Islands.
- Of the 78 endemic species, 25 are classified as 'Threatened' by the IUCN. Three species (*Bugun Liocichla* or *Liocichla bugunorum*; Himalayan Quail or *Ophrysia superciliosa*; Jerdon's Courser or *Rhinoptilus bitorquatus*) are listed as 'Critically Endangered'. Five of the endemic birds in India are categorised as 'Endangered', and
- 17 as 'Vulnerable', while 11 are categorised as 'Near Threatened' on the IUCN Red List.



The Zoological Survey of India (ZSI)

- The Zoological Survey of India (ZSI) was established on 1st July, 1916 to promote survey, exploration and research leading to the advancement in the knowledge of various aspects of exceptionally rich life of the erstwhile 'British Indian Empire'. The survey has its genesis in the establishment of the Zoological Section of the Indian Museum at Calcutta in 1875.
- It undertakes exploring, naming, describing, classifying and documenting animals from all over India.

Takakia

Why in News

- Takakia that has survived for millions of years is now threatened by climate change.

Important Points

- An international group of scientists have discovered exactly how it developed the ability to survive frost, life-threatening UV radiation and other hazardous conditions.
- While doing so, they found that the habitat of this species has been greatly altered by climate change in just a few years.
- When seen from a distance, Takakia looks like a later of moss or green algae on the rocks where it grows.
- But closer inspection would reveal slender turf around one centimetre in length with an arrangement of short, finger-like leaves.
- Takakia is a genus that only has two species. And both of them are found together only in one place—the Tibetan Plateau.
- The species on the Tibetan Plateau are covered by heavy layers of snow for eight months of the year.
- They are then exposed to unusually high levels of UV radiation for the other four months.
- Takakia evolved traits to survive these conditions over the last 65 million years.
- The plateau is only about that old, having been uplifted by continental drift. Gradually, over millenia, the moss's habitat got increasingly more extreme.



- These geological time records help us to trace the gradual adaptation to a life at high altitudes in the Takakia genome. Although the Takakia genome is evolving so rapidly, the morphology has not changed recognisably for more than 165 million years.
- This makes Takakia a true living fossil. This apparent contrast between unchanged shape and rapidly changing genome is a scientific challenge for evolutionary biologists.

Moss

- It is a small nonvascular spore-bearing land plants.
- Mosses are distributed throughout the world except in salt water and are commonly found in moist shady locations.
- Ecologically, mosses break down exposed substrata, releasing nutrients for the use of more-complex plants that succeed them.
- They also aid in soil erosion control by providing surface cover and absorbing water, and they are important in the nutrient and water economy of some vegetation types.

Drought Declaration

Why in News

- Karnataka urges Centre to re-evaluate drought declaration norms

Important Points

- Urging the Union government to bring changes to the Manual for Drought Management 2016 (updated in 2020) for the declaration of drought by States, Karnataka Chief Minister emphasised that it is necessary to have different parameters to declare drought in 14 agro-climatic zones in Karnataka in the light of dire situation caused by erratic weather conditions propelled by climate change.
- In the current southwest monsoon season, Karnataka had received 234 mm of rainfall as against a normal 336 mm, registering 34% deficiency.
- This is in the backdrop of the delayed arrival of monsoon and a deficiency of 56% in June. Throughout this season, rainfall distribution and intensity have been erratic.
- The CM has proposed specific area considerations, redefinition of dry weather, change in impact indicators and other important factors to realistically identify the extent of rainfall, excess rainfall and drought.
- Chief Minister has formally appealed for a revision in the rain deficit percentage, requesting a reduction from the current 60% to 30%.



Criteria for Drought Declaration

1. Rainfall in any taluk or district must be 60% deficit.
 2. The areas should experience a minimum of three weeks without rainfall.
 3. A 50% loss in the sown crop is necessary to declare an area drought-prone.
- Ministry of Agriculture's Manual for Drought Management 2016 (updated in 2020) for declaration of drought by States suggests a three-step approach:
 - 1) Based on mandatory indicators — rainfall deviation, Standardized Precipitation Index and dry spell, manual specifies various situations that may be considered a drought trigger.
 - 2) Assessment of impact indicators — agriculture, vegetation indices based on remote sensing, soil moisture, and hydrology.

Criteria for drought

Drought is declared if a taluk meets at least two of the multiple indicators, also measured at the taluk level:

Rainfall	If rainfall is 20% less than the normal (the only indicator measured at gram panchayat level)
Moisture	If soil moisture is 50% less than normal
Normalized Differential Vegetation Index (NDVI)	Indicates health of the crop measure by satellite images. (A healthy crop is different in colour as their chlorophyll content is high.)
Sowing status	If sowing is 50% less than the normal. (Related indicator is crop loss. If crop loss is 33% or more, it is considered.)

- 3) In last step, which comes in after both previous steps triggers have been set off, states conduct sample surveys for ground truthing and for judging the intensity of drought as 'severe' or 'moderate'.

Tampara Lake

Why in News

- Recently, the National Green Tribunal, Eastern Zone, has directed the Odisha government not to go ahead with 'illegal' construction in and around Tampara Lake.

Important Points

- The NGT has issued the order after hearing a petition filed by Wildlife Society of Orissa, an environmental pressure group, which alleged that the ongoing large-scale permanent construction work in Tampara Lake was illegal.
- The construction within the waterbody and its zone of influence were taken up without obtaining requisite permissions.
- The WSO had brought to its notice about non-implementation of wetland rules and dysfunctional status of grievance committee and State wetland authority to the extent that no meeting had been convened except once in the last six years.



Tampara Lake

- It is one of the largest fresh water lakes in the State of Odisha.
- The beautiful lake & the nearby Chilika Lagoon highlight the ecological diversity Odisha is blessed with.
- It supports at least 60 species of birds, 46 species of fishes, at least 48 species of phytoplanktons, and more than seven species of terrestrial plants and macrophytes.
- It is an important habitat for vulnerable species such as Cyprinus carpio, common pochard (Aythya ferina), and river tern (Sterna aurantia).
- It is already placed in the Wetland Atlas prepared by Ministry of Environment, Forest and Climate Change in 2010.
- Rich in fauna
- Spread across 337.86 ha with a length of 5.8 km and a width of 670 metres in Ganjam district, Tampara Lake supports at least 60 species of birds, 46 species of fishes, at least 48 species of phytoplanktons, and more than seven species of terrestrial plants and macrophytes.
- There is a patch of forest with width of 2 km that separates Bay of Bengal from the lake.
- It was added to the list of Ramsar Wetlands in 2021.
- It was included in the Wetland Atlas of the Union Ministry of Environment, Forest and Climate Change in 2010.

About NGT

- The National Green Tribunal is a specialized body that has been established under the National Green Tribunal Act (2010) for the effective and expeditious disposal of cases related to environmental protection and conservation of forests and other natural resources.
- Benches : The NGT has five benches - North Zone (New Delhi) (Principal bench), Central Zone (Bhopal), East Zone (Kolkata), West Zone (Pune), and South Zone (Chennai).
- Jurisdiction: It handles civil cases under the seven laws related to the environment including:
 - The Water (Prevention and Control of Pollution) Act, 1974,
 - The Water (Prevention and Control of Pollution) Cess Act, 1977,
 - The Forest (Conservation) Act, 1980,
 - The Air (Prevention and Control of Pollution) Act, 1981,
 - The Environment (Protection) Act, 1986,
 - The Public Liability Insurance Act, 1991
 - The Biological Diversity Act, 2002.

Term of Office

- Members are appointed for five-year terms and are not eligible for reappointment.

Eligibility

- Chairperson: Must be a retired Supreme Court Judge
- Judicial members: Must be retired High Court judges
- Expert members: Should have a professional certification and at least 15 years of experience in environmental/forest conservation and associated fields.

Hydroponics Farming

Why in News

- Recently, the Union Minister of Agriculture and Farmers' Welfare informed the Lok Sabha that ICAR-Indian Institute of Horticulture Research, Bengaluru (IIHR) has developed a variant of hydroponics.

Important Points

- Hydroponics offers an alternative to traditional farming, focusing on soil-less cultivation to boost productivity and water efficiency.
- Gaining traction in India, especially among forward-thinking entrepreneurs and farmers seeking sustainable and effective crop cultivation methods.



Emerging Trend

- Hydroponics presents a novel concept in the Indian agricultural landscape.
- Capturing attention from innovative farmers and entrepreneurs aiming for efficient and eco-friendly crop production.

Application Areas

- Currently, hydroponics is predominantly practiced in urban farming setups.
- Rooftop gardening and commercial farming are also adopting hydroponic techniques for enhanced results.

Introducing "Cocoponics"

- "Cocoponics" refers to the soilless production of vegetables using cocopeat as a substrate.
- This approach has demonstrated higher success rates in various vegetable crops, showcasing its potential for improved outcomes.

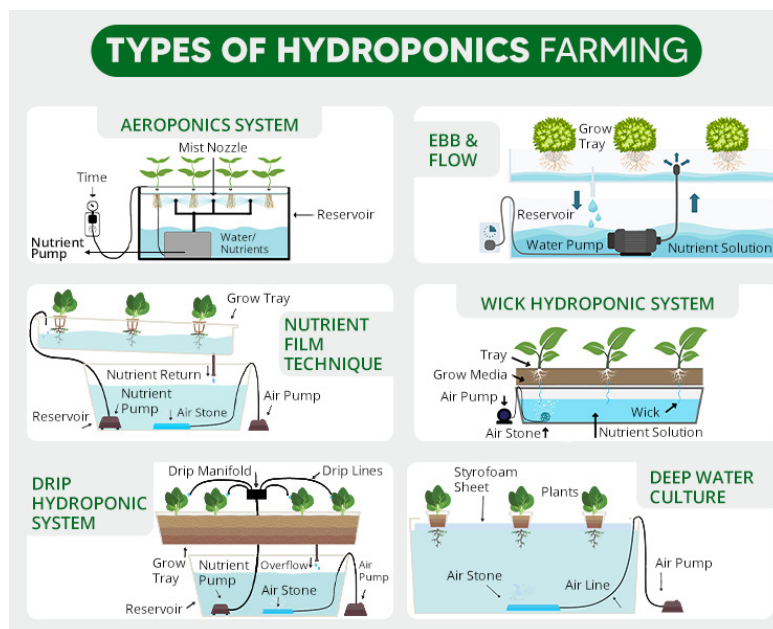
Merits of Hydroponics Farming

- Enhanced Water Efficiency:** Hydroponics significantly reduces water usage compared to traditional soil-based farming by delivering water directly to plant roots, minimizing wastage.
- Optimized Nutrient Delivery:** Nutrient solutions can be tailored to meet specific plant needs, ensuring balanced and efficient nutrient uptake, leading to healthier and faster growth.
- Space Utilization:** Hydroponic systems can be set up in limited spaces, making it suitable for urban farming, rooftop gardens, and vertical farming, maximizing land use.
- Faster Growth Rates:** Plants in hydroponic systems often grow faster than those in soil due to consistent access to nutrients and ideal growing conditions.
- Reduced Pest and Disease Risk:** Soil-borne pests and diseases are minimized, reducing the need for chemical treatments and enhancing crop health.
- Year-Round Cultivation:** Hydroponics enables year-round cultivation regardless of external weather conditions, ensuring a continuous supply of crops.

Demerits of Hydroponics Farming

- Initial Setup Cost:** Establishing a hydroponic system can be expensive, requiring investment in equipment, infrastructure, and nutrient solutions.

- **Technical Expertise:** Successful hydroponic farming demands knowledge of system setup, nutrient management, pH control, and troubleshooting.
- **Dependency on Technology:** Hydroponic systems require consistent monitoring and control of factors like water quality, nutrient levels, and environmental conditions.
- **Power Dependency:** Hydroponic systems often rely on electricity to power pumps, lights, and climate control, making them vulnerable to power outages.
- **Nutrient Management Complexity:** Accurate nutrient formulation is critical, and imbalances can lead to nutrient deficiencies or toxicities affecting plant growth.
- **Risk of System Failures:** Malfunctions in pumps, timers, or other components can disrupt the hydroponic system, potentially damaging crops.
- **Limited Crop Diversity:** While hydroponics can support a variety of crops, certain plants with extensive root systems may not thrive in hydroponic setups.



Hérons

Why in News

- The annual heronry count jointly organised by WWF-India in association with the Forest department in Thiruvananthapuram district has recorded more heronries than in the past.

Important Points

- Heronry counts aim at counting 'apparently occupied nests' of herons, egrets, and other colonial waterbirds.
- This is regarded as an effective and accurate way to determine the breeding population of waterbirds in an area.
- Being one of the top predators in the aquatic food chain, monitoring their population can indicate the health of the aquatic ecosystem, freshwater as well as brackish water.
- In Thiruvananthapuram, the annual enumeration is being conducted since 2016 by WWF-India's Kerala State office along with various partners.
- According to a press release, this year's count recorded 27 active heronries while five were uninhabited.
- The volunteers found a total of 742 nests belonging to seven different waterbird species.



About Heron

- These are any of about 60 species of long-legged wading birds.
- These are classified in the family Ardeidae (order Ciconiiformes) and generally including several species usually called egrets.
- The Ardeidae also include the bitterns (subfamily Botaurinae).
- These are widely distributed over the world but are most common in the tropics.
- They usually feed while wading quietly in the shallow waters of pools, marshes, and swamps, catching frogs, fishes, and other aquatic animals.
- They nest in rough platforms of sticks constructed in bushes or trees near water; the nests usually are grouped in colonies called heronries.

Bird species

- The lion's share of nests was of the Indian-pond Heron (430), followed by the Little Egret (101), Little Cormorant

(60), Indian Cormorant (49), Blackcrowned Night Heron (21) and Oriental Darter (10).

- One nest of Purple Heron was also found at the Punchakkari paddy fields in Vellayani.
- While a majority were occupied nests, around 10% of nests were found to be abandoned.
- This apparently indicated the early breeding of certain species.
- The predominant tree species hosting the heronries included teak, mango, copperpod tree, tamarind, rain tree, peepal, banyan tree.
- The heronry found in Vizhinjam housed the highest number of nests (173).
- Rajaji Nagar near Housing Board junction, Kumarichantha near Poonthura, and Kazhakuttom are some of the district's other notable nesting areas.
- The heronry count of 2021 that was conducted amid the COVID-19 induced restrictions recorded 233 nests that belonged to five species of waterbirds.

Many benefits

- It helps to introduce many new people to the world of birds, birdwatching, and nature watch, and also provides a platform for budding birdwatchers to improve their skills in birding and contribute more to bird conservation in the long run.
- Heronries are usually atop huge trees and this exercise helps us to monitor the healthy tree cover of the city too.

About World Wildlife Fund (WWF)

- It is an international non-governmental organization
- Founded in 1961
- Headquarter — Gland (Switzerland).
- Aim : wilderness preservation & the reduction of human impact on the environment
- It is the world's largest conservation organization

Objectives

- Conserving the world's biological diversity
- Ensuring that the use of renewable natural resources is sustainable
- Promoting the reduction of pollution and wasteful consumption

Reports & programmes

- Living Planet Report— published every two years by WWF since 1998; it is based on a Living Planet Index and ecological footprint calculation
- Earth hour
- Debt-for-nature swaps—financial transactions in which a portion of a developing nation's foreign debt is forgiven in exchange for local investments in environmental conservation measures.
- Marine Stewardship Council(MSC) — independent non-profit organization which sets a standard for sustainable fishing
- Healthy GrownPotato — eco-brand that provides high-quality, sustainably grown, packaged, and shipped potatoes to consumers by leveraging integrated pest management(IPM) farming practices on large scale farms

Global Maritime India Summit 2023

Why in News

- Indian Port Rail & Ropeway Corporation Limited (IPRCL) organized a virtual roadshow for the forthcoming Global Maritime India Summit.

Important Points

- GMIS 2023 is a premier maritime sector focussed event to bring together pivotal figures from the industry to explore opportunities, understand challenges, and stimulate investment within India's maritime sector.
- It aims to unveil broader prospects for domestic and international maritime stakeholders and investors.
- The Maritime India Summit has now evolved to the 'Global' Maritime India Summit this year.
- The summit will be held in New Delhi.



India's maritime sector

- The Indian maritime sector plays a pivotal role in the economic growth of India.
- With a vast coastline of more than 7,500 km, India is among the largest maritime countries in the world.
- Being a part of the world's busiest trade route elevates the economic prominence of India's maritime sector.
- 95% of India's foreign trade and 70% its total trade in terms of value takes place through seaways.
- Today, India is home to 12 major ports, over 200 other ports, 30 shipyards and a comprehensive hub of diverse maritime service providers.

UPSC without hard work is like a bird without wings.

Chapter

4

Economy

Index of Industrial Production (IIP)

Why in News

- India's Index of Industrial Production in India declined to a three-month low of 3.7 per cent in June, mainly due to poor showing by the manufacturing sector.

Important Points

- The factory output growth measured in terms of the Index of Industrial Production (IIP) stood at 12.6 per cent in June 2022 on account of a lower base effect.

Base Year

- The base is always given a value of 100.
- The current base year for the IIP series in India is 2011-12.
- So, if the current IIP reads as 116, it means that there has been 16% growth compared to the base year.



Poor show by manufacturing

- The manufacturing sector's output grew 3.1% in June 2023 against a 12.9% a year ago
- Power generation rose 4.2% in June 2023 compared to 16.4% a year ago
- Mining output rose by 7.6% against 7.8% in the year-ago period

About Index of Industrial Production

- It is one of the Prime indicators of economic development for the measurement of trends in the behavior of Industrial Production over a period of time with reference to a chosen base year.
- It indicates the relative change of physical production in the field of industries during a specified year as compared to the previous year.
- It is computed and published by the National Statistical Office (NSO) on a monthly basis.

Index of Eight Core Industries (ICI)

- ICI measures the collective and individual performance of production in selected eight core industries Coal, Crude Oil, Natural Gas, Petroleum Refinery Products, Fertilizers, Steel, Cement and Electricity.
- The objective of the ICI is to provide an advance indication of production performance of industries of 'core' nature before the release of IIP by the Central Statistics Office.
- These industries are likely to impact general economic activities as well as industrial activities.
- The Index is compiled and released by the Office of the Economic Adviser (OEA), Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry, Government of India.

Importance of IIP

- IIP also tells how a country is performing. A good increase in industrial production would certainly help in achieving good economic growth.
- It may also indicate the trends in the general demand of products in any sector or the overall economy and check whether we are on path of right growth.
- Investors can use the IIP of various industries to examine the growth in the respective industry. If the IIP is growing month-over-month for an industry, this is a sign that the companies in the industry are performing well.
- IIP is used by public agencies including the Government agencies/departments including Ministry of Finance, Reserve Bank of India etc. All-India IIP data is used for estimation of Gross Value Added for Manufacturing sector on quarterly basis.

Use-based Classification of Industries under IIP

The use-based classification of IIP comprises of the following categories of representative goods:

- Primary Goods: Mining, Electricity, Fuels and Fertilizers
- Capital Goods : Machinery items
- Intermediate Goods : yarns, chemicals, semi-finished steel items
- Infrastructure/Construction Goods : paints, cement, cables, bricks and tiles, rail materials
- Consumer Durables : garments, telephones, passenger vehicles
- Consumer Non-Durables : food items, medicines, toiletries, etc.

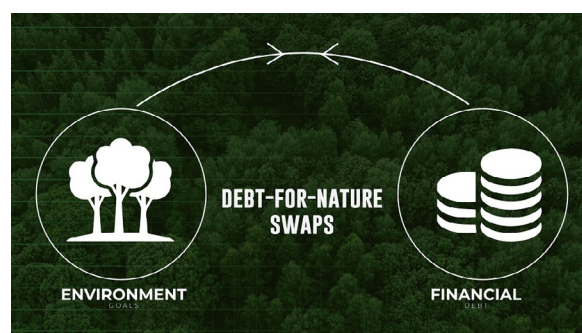
Debt-for-nature swap

Why in News

- Recently, Gabon announced a \$500 million debt-for-nature swap which is the largest such deal signed by any country.

Important Points

- Under the debt-for-nature swap, Gabon has agreed to a deal with the Bank of America, the US International Development Finance Corporation (USDFC) and The Nature Conservancy (TNC), to refinance \$500 million in national debt toward marine conservation efforts in the country.
- Gabon's debt has been restructured under a Blue Bond in the world's second-largest debt-for-nature swap.
- In May 2023, the world's first and largest debt swap to conserve oceans was signed by Ecuador. The country had exchanged \$1.6 billion denominated bonds for a new \$656 million loan.
- This is the fourth project under TNC's "Blue Bonds for Ocean Conservation" strategy. Gabon is the fourth country to partner with TNC on a Blue Bonds project after Seychelles, Belize and Barbados.
- In March 2023, the high-seas treaty agreed upon by the world offered an opportunity to protect 30 per cent of the world's oceans and lands by 2030.



Debt-for-nature swap

- It allows heavily indebted developing countries to seek help from financial institutions in the developed world with paying off their debt if they agree to spend on conservation of natural resources.
- Usually banks in developed countries buy the debts of such countries and replace them with new loans which mature later. These have lower interest rates.
- The notion of debt-for-nature swaps was first mooted in 1984 by Thomas Lovejoy, the former vice-president for science at the World Wildlife Fund-US, in response to the Latin American debt crisis.
- The first debt-for-nature swap was a third-party deal facilitated by Conservation International.
- Finalised in 1987, it involved foreign creditors agreeing to forgive USD 650,000 of Bolivia's debt in exchange for the country setting aside 1.5 million hectares in the Amazon Basin for conservation efforts.

Benefits

- Debt-for-climate swaps provide benefits for both creditors and debtors.
- Creditors can advance their development cooperation and climate finance goals, improve their chances of debt recovery, and strengthen their diplomatic ties with debtor nations.
- Debtors can reduce their external debt and debt service obligations, allocate fiscal resources towards other development priorities, promote climate action through domestic investment.

Blue Bonds

- Blue bonds work in the same way than traditional bonds but are different in that the entities issuing them are determined to use the resources generated – or a large proportion thereof – for the protection and conservation of marine ecosystems.

- Blue Bonds for Ocean Conservation presents an opportunity for island and coastal nations to reinvest in their natural resources.
- Blue Bonds for Ocean Conservation is one of TNC’s most innovative solutions, supporting island and coastal nations to use debt solutions to create long-term sustainable financing that can help protect 30% of our global ocean while achieving sustainable economic development and adapting to climate change.
- In doing so, TNC is leveraging philanthropy to catalyze investments for nature and people, improving more than 4 million square kilometers of ocean—helping governments unlock funds to deliver on their conservation goals and ultimately support the well-being of their communities.

How Blue Bonds Works?

1. **Conservation Commitments** : Governments are committed to protecting approximately 30% of their ocean areas in alignment with global conservation goals.
2. **Marine Spatial Planning** : TNC works with stakeholders to identify activities that combine conservation and sustainable economic opportunities, such as restoring coral reefs for tourism and improving fisheries management.
3. **Unlocking Sustainable Finance** : Working with partners, TNC helps refinance countries’ national debt, often purchasing the debt at a discount and refinancing it with better interest rates and/or longer repayment terms.

KEY STEPS IN BLUE BONDS



U P S C

September 2023

CRISIL Report

Why in News

- India's GDP to grow at 6% in FY24, inflation will moderate to 5%.

Important Points

- The country's gross domestic product (GDP) is likely to grow at 6 per cent in the 2024 fiscal amid a challenging global macroeconomic environment, Crisil Ratings said in a report.
- This growth rate is lower than the Reserve Bank of India's forecast of 6.4 per cent growth and the Economic Survey's projection of 6.5 per cent.
- As per rating agency, India's gross domestic product (GDP)



growth to touch 6 per cent in fiscal 2024, compared with 7 per cent estimated by the National Statistical Organisation (NSO) for fiscal 2023.

The agency has attributed three reasons for this 100-basis point deceleration in the FY24 GDP estimate:

- First, the slowing world economy due to aggressive rate hikes by major central banks will create downside risks to the country's growth. Domestic demand, therefore, will have to do the heavy lifting next fiscal.
- Second, the full impact of rate hikes by the RBI will be visible in the next fiscal as monetary moves typically affect growth with a lag of 3-4 quarters. And third, the tricky geopolitical situation implies that the country will continue to reckon with volatility in crude and commodity prices.
- The report said that over the next five fiscal years the economy is expected to grow at 6.8 per cent annually, driven by capital and productivity increases.
- While government policies will continue to push industrial capex and new-age opportunities, infrastructure spending will drive 12-16 per cent growth in overall capex next fiscal, the report said.
- The agency said an uptick in the investment cycle is expected to improve credit growth in the wholesale vertical, driven by the central government's increasing thrust on infrastructure sectors and the private sector's capex revival in conventional sectors as well as new-age sectors through the PLI scheme.
- The wholesale credit is expected to grow at 9-11 per cent in FY23-30 per cent.
- The report sees consumer inflation moderating to 5 per cent in the next fiscal from 6.8 per cent this fiscal, owing to a high-base effect.

About CRISIL

- CRISIL is a leading, agile and innovative global analytics company driven by its mission of making markets function better.
- CRISIL is India's foremost provider of ratings, data, research, analytics, and solutions.
- A strong track record of growth, culture of innovation and global footprint sets them apart.
- It has delivered independent opinions, actionable insights, and efficient solutions to over 100,000 customers.
- It operates from India, the United States (US), the United Kingdom (UK), Argentina, Poland, China, Hong Kong, Singapore, and the United Arab Emirates (UAE).

SBI Research Study

Why in News

- India's Per Capita Income Projected to Soar 7.5 Times by 2047.

Important Points

- India's per capita income is anticipated to surge 7.5 times from FY23's Rs 2 lakh to Rs 14.9 lakh by FY47, according to SBI Research.
- India's journey towards becoming a developed economy by 2047 has gained momentum, with a recent study conducted by SBI Research economists projecting a remarkable increase in per capita income.
- The study suggests that India's per capita income is poised to surge by 7.5 times, from Rs 2 lakh (\$2,500) in FY23 to Rs 14.9 lakh (\$12,400) per annum by FY47.
- Prime Minister has emphasized this objective, aiming to turn the vision of a developed India into a reality by 2047.

Positive Growth Trajectory

- The study by SBI Research underscores the immense growth potential in India's economy in the coming decades. This growth is attributed to several factors, including the country's transition from a lower-income group to an upper-income group economy and the positive impact of tax buoyancy.
- Notably, the formalization of the economy through initiatives like the Goods and Services Tax (GST) and the UDYAM portal for Micro, Small, and Medium Enterprises (MSMEs) has played a pivotal role in enhancing income tax returns.



Tax Filers and Income Brackets

- The study highlights a significant surge in the number of tax filers over the years. The number of tax filers has surged from 2.1 million in FY13 to a remarkable 85 million in FY23.
- Projections indicate that this number could reach an impressive 482 million by FY47. As a result, the proportion of the taxable workforce is anticipated to increase from 22.4% in FY23 to 85.3% by FY47.
- Moreover, the study predicts a notable decline in the number of individuals filing zero tax returns, indicating a shift towards higher income brackets.

Shifts in Income Brackets

- An intriguing trend observed over the years is the shift in income brackets. Between FY11 and FY22, there has been a noticeable movement of individuals out of the lowest income group (below Rs 5 lakh) and into higher income brackets.
- Specifically, 13.6% of individuals moved out of the lowest bracket, with 8.1% entering the Rs 5-10 lakh group and 3.8% moving into the Rs 10-20 lakh bracket.

Regional Distribution and Migration

- The study identifies that a significant proportion of tax returns, nearly half, are filed by individuals in five states: Maharashtra, Uttar Pradesh, Gujarat, Rajasthan, and West Bengal.
- Migration also emerges as a contributing factor to economic growth. The study indicates that migrating populations have contributed between 0.5% to 2.5% of the Gross State Domestic Product (GSDP) in various states.
- Furthermore, six states have benefited from net positive migration, with the overall advantages of migration outweighing any potential negative impacts on select states' GSDP.

Windfall Tax

Why in News

- Govt Increases Windfall Tax on Crude Oil and Diesel, Reinstates Tax on Overseas ATF Shipments

Important Points

- A windfall tax is a higher tax rate levied by governments against certain industries when economic conditions allow those industries to experience above-average profit.
- The United States Congressional Research Service (CRS) defines a windfall as an "unearned, unanticipated gain in income through no additional effort or expense".
- A windfall tax is levied on domestic crude oil if rates of the global benchmark rise above \$75 per barrel.
- The tax rates are reviewed every fortnight based on average oil prices in the previous two weeks.
- When the difference between the cost of crude oil and the value of refined products like diesel, ATF, and petrol exceeds \$20 per barrel, a levy is applied to their exports.
- Global status on levying windfall taxes
- A total of 24 EU countries have announced, proposed or implemented a windfall tax on energy companies, which European Commission officials put forward after energy prices soared at the start of 2022.
- The UK has also imposed a levy on profits made from the extraction of oil and gas from the North Sea.

Impact of windfall taxes Positive Impact

- Supplementary stream of revenue: The government aims to tap into the additional revenue generated by the oil industry during times of elevated prices.
- Redistribution of unexpected gains when high prices benefit producers at the expense of consumers.
- To maintain domestic supply: The government aims to control the flow of crude oil within the country as some refiners were favoring exports over domestic sales
- These additional revenues help in funding social welfare schemes and also in keeping lower trade deficit



Negative Impact

- Uncertainty: Windfall taxes are imposed retrospectively and are often influenced by unexpected events, this uncertainty of taxes can impact investments in this field.
- For instance, a similar tax was introduced by the U.S in the 1980s on domestic oil companies, the revenue it generated for the government was significantly lower than what it had projected, while the tax also reduced domestic oil production and increased imports.
- Populist measure: It is believed that such taxes are populist and politically expedient in the short term.
- Punitive in nature: Companies argue that profit is a reward for the industry's risk-taking in providing the end user with petroleum products.
- Determination: Another issue is whether to tax only the large corporations that account for the majority of high-priced sales or also smaller corporations. This raises the question of whether producers with revenues or profits below a certain threshold should be exempt.

Status of India's crude oil exports

- Russia has become India's primary crude oil supplier, surpassing West Asian countries, with a 27% share of India's crude imports in February. This increase is attributed to discounted Russian oil after the Ukraine war.
- India has expanded its refined petroleum product exports, notably to Argentina, Ecuador, Egypt, Iraq, and European countries due to a ban on Russian diesel imports by the European Union.
- Despite this, India's overall oil exports fell by 18% in April 2023 due to lower international crude oil prices, leading to a narrower oil trade deficit of 16%.

China's Deflation

Why in News

- China, the world's second-largest economy, is now facing deflation, a sustained decrease in general price levels.

Important Points

- Deflation, the inverse of inflation, signifies a persistent decline in the general price levels of goods and services within an economy.
- The recent occurrence of deflation in China, the world's second-largest economy, has triggered concerns about its economic prospects and the need for robust policy responses from Beijing.

Understanding Deflation

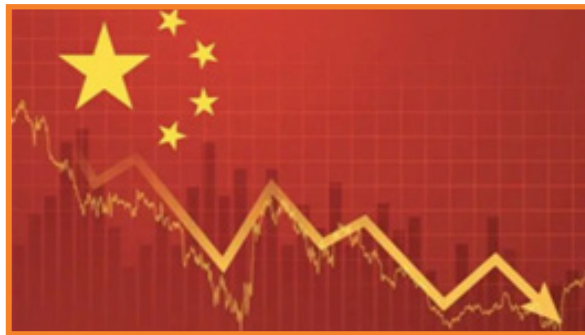
- Consumer Price Index (CPI) Decline: China's CPI dipped by 0.3 percent year-on-year in July, marking its first decrease since February 2021.
- Producer Price Index (PPI) Decline: The PPI experienced its tenth consecutive monthly decline, falling by 4.4 percent, surpassing the predicted 4.1 percent decrease.

Causes of Deflation in China

- Reduced Consumer Demand: When consumers anticipate further price drops, they tend to delay purchases. This leads to decreased demand for goods and services.
- Economic Slowdown: China's economic deceleration has contributed to the decline in consumer spending, amplifying deflationary pressures.

Implications of Deflation

- **Negative Demand Cycle:** Deflation can initiate a damaging cycle. Anticipated price decreases prompt consumers to postpone purchases, leading to reduced demand, lower production, decreased business revenues, potential layoffs, and a subsequent decline in consumer spending.
- **Economic Contraction:** The cyclical reduction in economic activity can intensify, causing a downward spiral marked by economic contraction, job losses, and financial instability.
- **Real Burden of Debt:** Deflation elevates the actual burden of debt. As prices fall, the relative value of debt remains constant or increases, straining the capacity of individuals, businesses, and governments to manage their debt obligations.



Concerns Associated with Deflation

- **Economic Slowdown:** Many economists view deflation as an indicator of dwindling demand for goods and services, potentially leading to an economic slowdown.
- **Demand-Supply Dynamics:** Falling prices may prompt consumers to delay purchases, hampering demand and triggering a ripple effect throughout the economy.
- **Resource Utilization:** A certain level of inflation is deemed necessary for optimal resource utilization, ensuring full economic potential is realized.

China's Deflation Scenario

- **Policy Measures:** China's central bank maintained low interest rates to stimulate demand amid the post-pandemic recovery.
- **Property Sector Turmoil:** China's pre-pandemic property sector challenges, affecting GDP contribution, may be a root cause of the current deflationary trend.
- **Complex Factors:** While liquidity may not be the core issue, comprehensive analysis of money supply and monetary transmission is necessary to determine the underlying cause.

Positive Impacts

- **Cheaper Imports:** If Chinese goods become cheaper due to deflation, it could lead to lower import costs for India, benefiting consumers and businesses that rely on Chinese imports.
- **Lower Input Costs:** Reduced prices for raw materials and intermediate goods from China could lower production costs for Indian industries that depend on these inputs.
- **Global Supply Chains:** If Chinese deflation reduces the cost of production within global supply chains, Indian businesses integrated into these chains might experience cost savings.
- **Improved Trade Balance:** Cheaper Chinese imports can contribute to a more favorable trade balance for India, especially if it leads to reduced import bills.

Negative Impacts

- **Export Competition:** Cheaper Chinese exports due to deflation could increase competition for Indian exports in international markets, potentially affecting certain Indian industries.
- **Import Dumping:** A flood of cheap Chinese goods into the Indian market could harm domestic producers, leading to job losses and economic strain.
- **Investment Flows:** A slowdown in China's economy caused by deflation might lead to reduced investor confidence and affect foreign direct investment (FDI) flows to India.
- **Currency Effects:** If China's central bank devalues its currency to boost exports in response to deflation, it could lead to a stronger Indian rupee, impacting India's export competitiveness.
- **Commodity Prices:** Reduced demand for commodities from China due to deflation could lead to lower global commodity prices, affecting Indian exporters of raw materials.

RBI's New Pilot for Frictionless Credit

Why in News

- The RBI commenced a pilot programme endeavouring to evaluate the feasibility and functionality of the 'Public Tech Platform for Frictionless Credit'.

Important Points - Need for the platform

- The suggested platform would strive to enable delivery of frictionless credit by facilitating seamless flow of required digital information to lenders.
- Digital delivery of credit (delivering credit/loans through digital means) or any loan is preceded by a process of scrutiny known as credit appraisal.
- The process attempts to evaluate and accordingly predict the prospective borrowers' ability for repayment of credit/loan and adhering to the credit agreement.
- This pre-disbursement process is particularly important for banks since it would in turn determine their interest income and impact on the balance sheet.
- The central banking regulator has observed that the data required for the process rests with different entities like central and state governments, account aggregators, banks, credit information companies, and digital identity authorities.
- Thus, being in separate systems, it creates hindrances in frictionless and timely delivery of rule-based lending.
- This new platform would bring all of it together in a single place.
- To facilitate frictionless and timely delivery of loans, the central banking regulator had instituted a pilot project for the digitalisation of Kisan Credit Card (KCC) loans, of less than ₹1.6 lakh.
- It tested end-to-end digitalisation of the lending process in a paperless and hassle-free manner.
- It provides for doorstep disbursement of loans in assisted or self-service mode without any paperwork.



More about the platform

- The platform is premised around the learnings from all the ongoing programmes, and further expands the scope to all types of digital loans.
- The public platform will be developed by its wholly owned subsidiary, the Reserve Bank Innovation Hub (RBIH).
- The proposed end-to-end platform will have an open architecture, open Application Programming Interfaces (API) and standards, to which all financial sector players would be able to connect seamlessly in a 'plug and play' model.
- With the participation from certain banks, the platform would extend its focus also towards dairy loans, MSME loans (without collateral), personal loans and home loans.
- **It is expected to link with services like:**
 - Aadhar e-KYC,
 - Aadhar e-signing,
 - land records from onboarded State governments, satellite data,
 - PAN validation, transliteration,
 - account aggregation by account aggregators (AAs),
 - milk pouring data from select dairy co-operatives, and house/property search data.
- Thus, it would cover all aspects of farming operations (essential to understand the exposure and default risk for loans of the nature) alongside those necessary for ascertaining financial profiles.

Significance of the project

- Access to information : Improved access to information provides the basis for fact-based and quick credit assessments.
- More coverage: It ensures that credit is extended to a larger set of borrowers with good credit history.
- Benefit to borrowers: The borrowers too would benefit by the resulting lower cost of accessing capital, which would translate into productive investment spending. The lending platform would bring about reduction of costs, quicker disbursement and scalability.

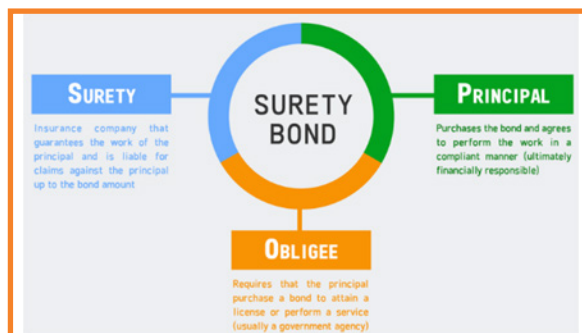
Insurance Surety Bonds

Why in News

- Recently, the National Highways Authority of India (NHAI) organised a brainstorming session with stakeholders to expedite the adoption of Insurance Surety Bonds for its contracts.

Important Points

- The National Highways Authority of India (NHAI) has been engaging in active dialogue with various stakeholders, including representatives from insurance companies, contractors, industry experts, and senior officials to accelerate the adoption of Insurance Surety Bonds for NHAI contracts.
- This initiative is aimed at exploring possibilities and resolving operational constraints for the broader application of these bonds as an alternative to Bank Guarantees (BGs).
- With India expected to become the world's third-largest construction market, the Infrastructure Sector alone would require an estimated Rs. 2.70 lakh crore of bank guarantees in 2023.
- This amount is expected to grow by 6 to 8 percent annually. Surety Bonds are considered a viable option to Bank Guarantees, offering longer maturity terms and cost-effective ways to finance contract security options.
- Additionally, these bonds could provide an estimated capital relief of Rs. 50,000 crore for the Infrastructure Sector.



Insurance Surety Bonds

- These bonds can be defined in their simplest form as a written agreement to guarantee compliance, payment, or performance of an act.
- These are instruments where insurance companies act as 'Surety' and provide the financial guarantee that the contractor will fulfil its obligation as per the agreed terms.
- Surety is a unique type of insurance because it involves a three-party agreement.

The three parties in a surety agreement are

- Principal:** The party that purchases the bond and undertakes an obligation to perform an act as promised.
- Surety:** The insurance company or surety company that guarantees the obligation will be performed. If the principal fails to perform the act as promised, the surety is contractually liable for losses sustained.
- Obligee:** The party who requires and often receives the benefit of the surety bond. For most surety bonds, the obligee is a local, state or federal government organisation.

Advantages

- It will act as a security arrangement for infrastructure projects and will insulate the contractor as well as the principal.
- The product will cater to the requirements of a diversified group of contractors, many of whom are operating in today's increasingly volatile environment.
- The product gives the principal a contract of guarantee that contractual terms and other business deals will be concluded in accordance with the mutually agreed terms.
- In case the contractor doesn't fulfil the contractual terms, the Principal can raise a claim on the surety bond and recover the losses they have incurred.
- Unlike a bank guarantee, the Surety Bond Insurance does not require large collateral from the contractor, thus freeing up significant funds for the contractor, which they can utilise for the growth of the business.
- The product will also help in reducing the contractors' debts to a large extent, thus addressing their financial worries.

Chapter 5

Science & Technology

Akira Ransomware

Why in News

- Recently Government has issued 'Akira' ransomware warning for users.

Important Points

- The Computer Emergency Response Team of India issued an alert for ransomware dubbed "Akira."
- The ransomware, found to target both Windows and Linux devices, steals and encrypts data, forcing victims to pay double ransom for decryption and recovery.
- The group behind the ransomware has already targeted multiple victims, mainly those located in the U.S.,
- and has an active Akira ransomware leak site with information, including their most recent data leaks.



What is the Akira ransomware ?

- The Akira ransomware is designed to encrypt data, create a ransomware note and delete Windows Shadow Volume copies on affected devices.
- The ransomware gets its name due to its ability to modify filenames of all encrypted files by appending them with the ".akira" extension.
- The ransomware is designed to close processes or shut down Windows services that may keep it from encrypting files on the affected system.
- It uses VPN services, especially when users have not enabled two-factor authentication, to trick users into downloading malicious files.
- Once the ransomware infects a device and steals/encrypts sensitive data, the group behind the attack extorts the victims into paying a ransom, threatening to release the data on their dark web blog if their demands are not met.

How does Akira ransomware work ?

- The ransomware deletes the Windows Shadow Volume copies on the affected device.
- These files are instrumental in ensuring that organisations can back up data used in their applications for day-to-day functioning.
- VSS services facilitate communication between different components without the need to take them offline, thereby ensuring data is backed up while it is also available for other functions.
- Once the ransomware deletes the VSS files it proceeds to encrypt files with the pre-defined ".akira" extension.
- The ransomware also terminates active Windows services using the Windows Restart Manager API, preventing any interference with the encryption process.
- It is designed to not encrypt Program Data, Recycle Bin, Boot, System Volume information, and other folders instrumental in system stability. It also avoids modifying Windows system files with extensions like .syn, .msl and .exe.
- Once sensitive data is stolen and encrypted, the ransomware leaves behind a note named akira_readme.txt which includes information about the attack and the link to Akira's leak and negotiation site.
- Each victim is given a unique negotiation password to be entered into the threat actor's Tor site.
- Unlike other ransomware operations, this negotiation site just includes a chat system that the victim can use to communicate with the ransomware gang, a report from The Bleeping Computer shares.

What can users do to protect against Akira attacks?

- Maintain up-to-date offline backups
- Ensure OS and networks are updated regularly, with virtual patching for legacy systems
- Establish Domain-based Message Authentication, Reporting, and Conformance, Domain Keys Identified Mail (DKIM), and Sender policy for organizational email validation
- Strong password policies
- Strong Multi-Factor Authentication
- Strict external device usage policy
- Data-at-rest and data-in-transit encryption
- Blocking attachment file types with .exe, .pif, .url, or other such extensions
- Avoid clicking on suspicious links to avoid downloads of malicious code
- Conduct regular security audits of systems, especially database servers

How does ransomware infect devices ?

- Ransomware is typically spread through spear phishing emails that contain malicious attachments in the form of archived content (zip/rar) files.
- Other methods used to infect devices include drive-by-download, a cyber-attack that unintentionally downloads malicious code onto a device, and specially crafted web links in emails, clicking on which downloads malicious code.
- The ransomware reportedly also spreads through insecure Remote Desktop connections.

Who does Akira ransomware target ?

- In use since March 2023, the ransomware has steadily built up a list of victims, targetting corporate networks in various domains including education, finance, real estate, manufacturing, and consulting.
- Once it breaches a corporate network, the ransomware spreads laterally to other devices after gaining Windows domain admin credentials.
- The threat actors also steal sensitive corporate data for leverage in their extortion attempts.

What can users do to protect against ransomware ?

- CERT-In has advised users to follow basic internet hygiene and protection protocols to ensure their security against ransomware.
- These include maintaining up to date offline backups of critical data, to prevent data loss in the event of an attack.

- Additionally, users are advised to ensure all operating systems and networks are updated regularly, with virtual patching for legacy systems and networks.
- Companies must also establish Domain-based Message Authentication, Reporting, and Conformance, Domain Keys Identified Mail (DKIM), and Sender policy for organizational email validation, which prevents spam by detecting email spoofing.
- Strong password policies and multi-factor authentication (MFA) must be enforced.
- There should also be a strict external device usage policy in place and data-at-rest and data-in-transit encryption along with blocking attachment file types like .exe, .pif, or .url to avoid downloading malicious code.
- The agency has also advised periodic security audits of critical networks/systems, especially database servers.

Maya OS

Why in News

- Defence sector to dump Microsoft Windows; to replace with indigenous Maya OS with Chakravayuh.

Important Points

- In the face of increasing cyber and malware attacks on defence as well as critical infrastructure across the country, the Defence Ministry has decided to replace the Microsoft Operating System (OS) in all computers connected to the Internet with a new OS, Maya, based on open-source Ubuntu developed locally.



About Maya OS

- It is a new Operation System (OS) based on an open-source platform.
- It has the interface and all functionality like Windows and users will not feel much difference as they transition to it.
- Maya was developed by government development agencies within six months.
- Aim : To prevent malware attacks and other cyberattacks which had seen a steep increase.
- Currently, Maya is being installed only in Defence Ministry systems and not on computers connected to the networks of the three Services.
- Maya has the interface and all functionality like Windows and users will not feel much difference as they transition to it.
- To begin with, the direction is to install Maya on all computers connected to the Internet in South Block.
- In addition, an 'end point detection and protection system', Chakravayuh, is also being installed in these systems.

Operating System (OS)

- An OS is a software program that acts as an intermediary between computer hardware and the computer user.
- It provides a user-friendly interface and manages the hardware and software resources of a computer system.
- In essence, an operating system enables a user to interact with a computer and run applications efficiently.
- An OS, after being initially loaded into the computer by a boot program, manages all of the other application programs in a computer.

What is Cyber Security ?

- The technique of protecting internet-connected systems such as computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks is known as cybersecurity.
- Cybersecurity can be divided into two parts one is cyber, and the other is security.
- Cyber refers to the technology that includes systems, networks, programs, and data.
- And security is concerned with the protection of systems, networks, applications, and information. In some cases, it is also called electronic information security or information technology security.

Types of Cyber Security

- Network Security: It involves implementing the hardware and software to secure a computer network from

unauthorized access, intruders, attacks, disruption, and misuse. This security helps an organization to protect its assets against external and internal threats.

- **Application Security:** It involves protecting the software and devices from unwanted threats. This protection can be done by constantly updating the apps to ensure they are secure from attacks. Successful security begins in the design stage, writing source code, validation, threat modeling, etc., before a program or device is deployed.
- **Information or Data Security:** It involves implementing a strong data storage mechanism to maintain the integrity and privacy of data, both in storage and in transit.
- **Identity management:** It deals with the procedure for determining the level of access that each individual has within an organization.
- **Operational Security:** It involves processing and making decisions on handling and securing data assets.
- **Mobile Security:** It involves securing the organizational and personal data stored on mobile devices such as cell phones, computers, tablets, and other similar devices against various malicious threats. These threats are unauthorized access, device loss or theft, malware, etc.
- **Cloud Security:** It involves in protecting the information stored in the digital environment or cloud architectures for the organization. It uses various cloud service providers such as AWS, Azure, Google, etc., to ensure security against multiple threats.
- **Disaster Recovery and Business Continuity Planning:** It deals with the processes, monitoring, alerts, and plans to how an organization responds when any malicious activity is causing the loss of operations or data. Its policies dictate resuming the lost operations after any disaster happens to the same operating capacity as before the event.
- **User Education:** It deals with the processes, monitoring, alerts, and plans to how an organization responds when any malicious activity is causing the loss of operations or data. Its policies dictate resuming the lost operations after any disaster happens to the same operating capacity as before the event.

Budapest Convention

- The Council of Europe's (CoE) Cybercrime Convention is also known as the Budapest Convention. It was open for signature in 2001 and came into force in 2004.
- The convention is the sole legally binding international multilateral treaty on cybercrime. It coordinates cybercrime investigations between nation-states and criminalizes certain cybercrime conduct.
- It serves as a guideline for any country developing comprehensive national legislation against Cybercrime and as a framework for international cooperation between state parties to this treaty.
- The Budapest Convention is supplemented by a Protocol on Xenophobia and Racism committed through computer systems.
- **Significance:** Almost all stakeholders agree that the current form of cross-border data sharing for law enforcement through the Mutual Legal Assistance Treaty (MLAT) is insufficient for the digital age. However, there is an ongoing debate whether to revamp MLAT or form an entirely new system for cybercrimes in the form of this Convention.
- This Convention has eagerly called for Indian participation since its formation in 2001, but India has decided not to be a party to it.

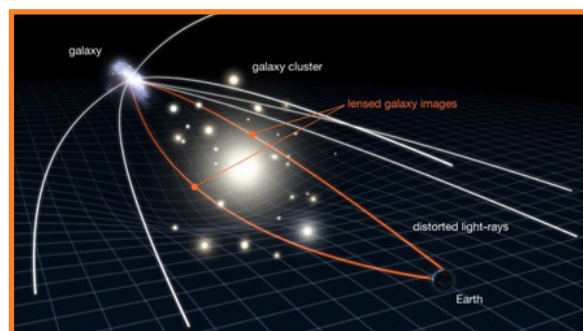
Einstein Cross

Why in News

- Recently, astronomers have discovered a stunning, rare example of an "Einstein cross" splitting and magnifying light from the far depths of the universe.

Important Points

- Einstein predicted the existence of these crosses back in 1915.
- Einstein's theory of general relativity describes the way massive objects warp the fabric of the universe, called space-time.
- The latest Einstein Cross has some interesting statistics.



- The main galaxy doing the lensing lies about 5.998 billion light-years away. The distant galaxy that it's lensing is more than 11.179 billion light-years away.
- Thus, the foreground lensing galaxy is giving an amazing look at a galaxy in the early Universe.

What Makes an Einstein Cross ?

- When a massive galaxy sits directly "in front of" a more distant background object (such as a galaxy or a quasar) the distribution of matter around that galaxy and its gravitational effect can "bend" the light from the object as it passes by.
- In this case, Earth, the lensing galaxy and the quasar have aligned to perfectly duplicate the quasar's light, arranging them along a so-called Einstein ring.

Why are these so rare ?

- It turns out that gravitational lensing happens everywhere in the universe, mostly in the form of so-called "weak lensing".
- Creating an Einstein Cross requires a precise alignment of the lensing body and light source and astronomers refer to this as "strong gravitational lensing".

What is Gravitational Lensing?

- It occurs when a massive celestial body, such as a galaxy cluster, causes a sufficient curvature of spacetime for the path of light around it to be visibly bent, as if by a lens.
- The body causing the light to curve is accordingly called a gravitational lens.
- An important consequence of this lensing distortion is magnification, allowing us to observe objects that would otherwise be too far away and too faint to be seen.

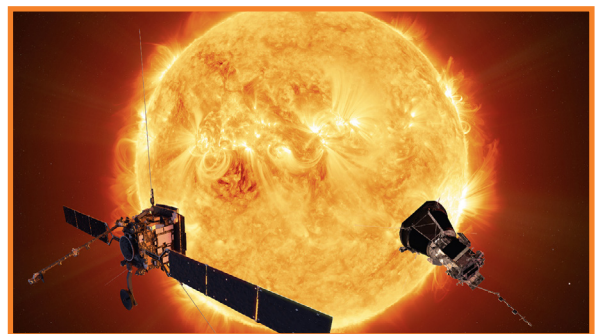
Parker Solar Probe

Why in News

- NASA's Parker Solar Probe recently executed a short maneuver that kept the spacecraft on track to reach the aim point for the mission's sixth Venus flyby.

Important Points

- Since 2021, NASA's Parker Solar Probe has been treading impressively close to the sun in order to capture unprecedented data.
- NASA's Parker is on track to make its sixth and closest flyby of Venus. The goal is for the probe to use the amber-hued planet's gravity to tighten its orbit around the sun — a technique Parker has been employing repeatedly during its mission, which began with a launch in 2018.
- If all goes well with this Venusian approach, Parker will come within about 4.5 million miles (7.2 million km) of the solar surface.
- NASA has one more Venus flyby planned after this one, which is designed to sling Parker to within just 3.9 million miles (6.2 million km) of the sun.
- For context, Earth sits about 93 million miles (149 million km) from that shining yellow orb. So, Parker's going to get really, really close.
- Parker's recent maneuvering consisted of the craft firing its small thrusters for 4.5 seconds in order to adjust its trajectory by 77 miles (124 kilometers) and increase its speed by 1.4 seconds while heading to Venus.
- These shifts are actually quite minute considering the probe has been traveling at hundreds of thousands of miles per hour while flying through the inner solar system.
- Parker's velocity is about 8.7 miles per second, so in terms of changing the spacecraft's speed and direction, this trajectory correction maneuver may seem insignificant.



Parker Solar Probe

- It is a NASA spacecraft designed to study the Sun and its atmosphere.

- It was launched on August 12, 2018, from Cape Canaveral Air Force Station, Florida, and is currently orbiting the Sun in a highly elliptical orbit that takes it closer to the Sun than any previous spacecraft.
- The mission objectives of the Parker Solar Probe are to study the structure and dynamics of the Sun's corona, the Sun's magnetic field, and the solar wind.
- To achieve this, the probe will make a total of 24 close approaches to the Sun over the course of its mission, getting as close as 3.83 million miles from the Sun's surface, which is about 7 times closer than any previous spacecraft.
- In December 2021, the Parker Probe reached the atmosphere of the sun. Since then, it's been looping around the sun, drawing closer each time, and sending back tons of data about everything it encounters.

Features

- Mass: 685 kilograms at launch.
- Scientific Instruments: Fields Experiment (FIELDS), Integrated Science Investigation of the Sun (ISIS), Wide Field Imager for Solar Probe (WISPR), Solar Wind Electrons Alphas and Protons (SWEAP).
- Parker Solar Probe and its instruments are protected from the Sun by a 4.5-inch-thick (11.43 cm) carbon-composite shield, which can withstand temperatures reaching nearly 2,500 degrees Fahrenheit (1,377 Celsius).

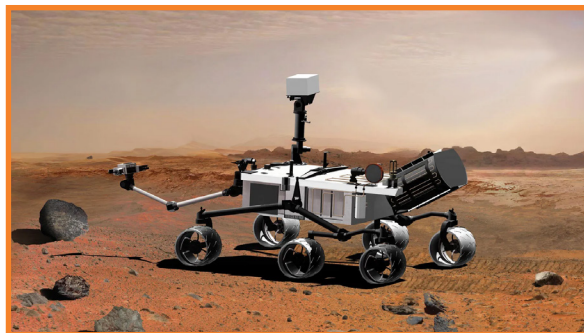
Mars Curiosity Rover

Why in News

- NASA's Curiosity Mars rover recently spotted distinctive hexagonal mud cracks on Mars that scientists speculate may offer the first evidence of wet-dry cycles on the planet.

Important Points

- It is a S. robotic vehicle designed to explore the surface of Mars.
- It was launched aboard an Atlas V rocket from Cape Canaveral Air Force Station, Florida in 2011, and landed in 2012, after taking eight months and 10 days to reach the Red Planet.
- The rover is currently roaming Mars' landscape looking for signs of life and learning about the Red Planet's unique environment.
- The rover is part of NASA's Mars Science Laboratory mission which tested a novel landing method that saw the spacecraft descend on a parachute before its landing system fired up its rockets and hovered as the rover was lowered down onto the surface.



Features

- It is about 3 metres long and weighs about 900 kg.
- It does not rely on solar cells for its energy needs but rather draws its electric power from a thermoelectric power generator, with the heat source being the radioactive decay of plutonium and the heat sink being Mars's atmosphere.
- According to NASA, Curiosity has four main science goals in support of the agency's Mars exploration program:
 - Determine whether life ever arose on Mars.
 - Characterize the climate of Mars.
 - Characterize the geology of Mars.
 - Prepare for human exploration.

NASA's Perseverance rover

- It is a robotic explorer to land on Mars as part of NASA's ongoing Mars 2020 Mission.
- Main Job: Seek signs of ancient life and collect samples of rock and regolith (broken rock and soil) for possible return to Earth.
- The rover will collect samples of rock and soil, encase them in tubes, and leave them on the planet's surface to be returned to Earth at a future date.



- Launch: It was launched on July 30, 2020 from Cape Canaveral, Florida.
- Landing: Successfully landed on the surface of Mars's Jezero Crater on Feb. 18, 2021.

Features

- It is about 3 metres long, 2.7 metres wide, and 2.2 metres tall.
- It is about the size of a car, but weighs only about 1,025 kilograms with all instruments on board.
- Power source: Multi-Mission Radioisotope Thermoelectric Generator (MMRTG). Converts heat from the radioactive decay of plutonium into electricity.

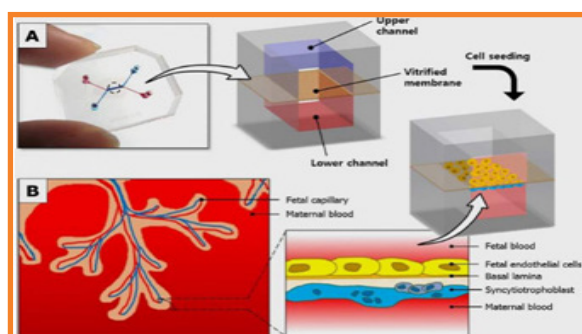
Placenta on chip

Why in News

- Recently, researchers have developed devices called placenta-on-a-chip (POC).

Important Points

- A variety of devices that imitate the placenta at various stages of pregnancy can aid in drug development, study the toxicity of substances such as caffeine, and understand the impact of preeclampsia and diabetes mellitus during pregnancy.
- During pregnancy, the placenta protects the infant from potentially dangerous medications and toxins. However, some can still pass through this barrier and injure the baby in the womb.
- As a result, most drugs are not offered to pregnant women, and they continue to suffer.
- It is difficult to determine which medications can be administered during pregnancy that will not pass the placenta.



Placenta on chip

- A bunch of devices mimicking the placenta at various stages of pregnancy can help in drug discovery, study of toxicity of chemicals like caffeine, and understanding the effects of conditions such as preeclampsia and diabetes mellitus during pregnancy.
- In pregnancy, the placenta shields the baby from harmful drugs and chemicals. But some can still cross this barrier and cause harm to the baby in the womb.
- Thus, pregnant women are not given most medications and they continue to suffer. Determining which medicines can be given during pregnancy that would not cross the placenta is a daunting task.
- Researchers have used microfluidic technology which can integrate processes, to create an environment that represents basic organ structure and functions of the placenta.
- It allows researchers to investigate placental function, diagnose issues, practice customized medicine, and develop new medicines.
- This will reduce the need for animal testing and change the pharmaceutical industry, improving the lives of millions of people worldwide.
- The placenta in a lab dish developed by the team allows different cells to interact with each other, incorporate mechanical properties and mimic the blood flow, which closely resembles the in-vivo condition.
- Among various available POC models, these devices are more suitable for probing placental development as well as diseases caused due to defects in the placenta. Also, patient-specific sample screening will be possible for personalised medicine.

Advantage of placenta-on-chip

- It will enable early detection of adverse conditions and allows researchers and healthcare professionals to observe, study, and identify potential issues that may arise during pregnancy.
- It enables the study of placental function, detection of complications, personalized medicine, and the development of new therapies.

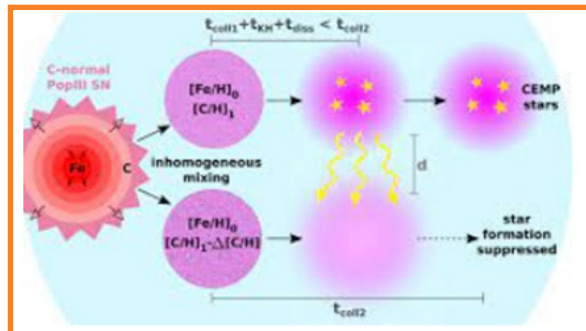
Carbon-Enhanced Metal-Poor (CEMP) star

Why in News

- Recently, scientists at the Indian Institute of Astrophysics (IIA, Bangalore) under the Department of Science & Technology (DST), Govt. of India, have discovered a unique star named HE 1005-1439 classified as a carbon-enhanced metal-poor (CEMP) star.

Important Points

- The researchers used high-resolution spectroscopic data acquired using High Dispersion Spectrograph (HDS) attached to SUBARU telescope (Japan) to analyze the star's surface chemical composition.
- The team found that the iron content of the star is thousand times less than that of the sun and it is heavily enriched with neutron-capture elements.
- The star which defies previous classifications and challenges previous understanding of star formation processes shows signs of having been formed through the combination of two different neutron-capture processes - the slow (s-) and intermediate (i-) neutron-capture processes.
- It can help understand how different star formation processes influence the elemental composition of stars.
- Elements beyond iron are created due to reactions in nuclear astrophysics called neutron capture processes.
- The slow (s-) process is believed to occur in low-mass stars during the asymptotic giant branch (AGB) phase and the rapid (r-) process is believed to occur in Supernovae and Neutron Star mergers.
- One of the proposed sites for intermediate (i-) process is low-metallicity low-mass AGB stars.
- Understanding the relative contributions of these processes to the elemental composition of stars is important for understanding the chemical evolution of galaxies and the origins of the elements in the universe.



Key facts Carbon-enhanced metal-poor (CEMP) star

- These stars are characterized by diverse heavy elements abundance patterns and are primarily classified into four groups, based on which groups of heavy elements are more abundant.
- These are mostly dwarf stars, sub-giant stars, or giant stars, and stars that belong to these evolutionary stages cannot produce elements heavier than iron.

India Web Browser Development Challenge (IWBDCh)

Why in News

- The Ministry of Electronics and Information Technology (MeitY) recently launched the Indian Web Browser Development Challenge (IWBDCh).

Important Points

- The challenge is spearheaded by MeitY in collaboration with the Controller of Certifying Authorities (CCA) and the Centre for Development of Advanced Computing (C-DAC) Bangalore.
- The Challenge seeks to inspire and empower technology enthusiasts, innovators, and developers from all corners of the country to create an indigenous web browser.
- The desired browser will have its own trust store, use a root certificate from India's CCA, and offer cutting-edge functionalities and enhanced security & data privacy protection features.
- As part of the challenge the government has announced a cash prize of Rs 3.4 crores for the developers.



Qualifications for Participants

- The Indian Tech Start-ups, MSMEs, Companies, and LLPs registered in India under the Companies Act 2013 can apply.
- The entity must have at least 51% shareholding with Indian citizens or persons of Indian origin.
- The applicant's entity should not be a subsidiary company of any foreign corporation.
- Participants can apply either as “individuals” or “organization”. Members applying as “individuals” should have a minimum of 3 and a maximum of 7 members in their Group.
- All other applicants (Startups, MSME, etc.) should apply under the “organization” category only.
- Desired features in an Indian web browser: The ministry has also laid down the features desired in an Indian web browser.
- It must be compatible with all platforms, including iOS, Android and Desktop.
- It should offer built-in accessibility support.
- The browser should also have the ability to digitally sign the documents using a crypto token.
- It should also have parental control and a web filter for child-friendly browsing.
- It should come with support for Web3 and compliance with W3C standards.
- Lastly, it should also support all the official Indian languages.

Controller of Certifying Authorities (CCA)

- The Information Technology Act 2000 (IT Act) provides for the CCA.
- Function: To license and regulate the working of Certifying Authorities (CAs).
- The CAs issue digital signature certificates for electronic authentication of users.
- The CCA also maintains the National Repository of Digital Certificates (NRDC), which contains all the certificates issued by all the CAs in the country.
- Its aim is to promote the growth of e-Commerce and e-Governance through a wide use of digital signatures.
- The Controller of Certifying Authorities (CCA) is appointed by the Central Government under section 17 of the IT Act.

STEREO Spacecraft

Why in News

- Nasa's Solar Terrestrial Relations Observatory (STEREO-A) spacecraft made its first Earth flyby nearly 17 years after its launch.

Important Points

- Launched from Cape Canaveral in 2006, the twin STEREO spacecraft, STEREO-A, and STEREO-B, embarked on their mission to chart Earth-like orbits around the Sun.
- The two spacecraft were situated in Sun's orbit, STEREO-A ("Ahead") and STEREO-B ("Behind").
- The dual-spacecraft mission accomplished its major goal by delivering the first-ever stereoscopic view of our star.
- In 2011, another significant milestone was achieved as both STEREO-A and -B reached a remarkable 180-degree separation in their orbits, which gave us the full sphere image of the Sun.
- During the upcoming Earth flyby, STEREO-A will once again combine views to achieve stereoscopic vision, a technique that allows the extraction of 3D information from two-dimensional images.
- This process is similar to how our two eyes, looking out at the world from different locations, create depth perception.



Significance of STEREO-A

- It will synthesize its views with those from Nasa's and the European Space Agency's Solar and Heliospheric Observatory (SOHO) and Nasa's Solar Dynamics Observatory (SDO).

- Its distance from Earth changes throughout the flyby, it will optimize its stereo vision for different-sized solar features at different times, akin to adjusting the focus on a several million-mile-wide telescope.
- It will allow scientists to understand how a coronal mass ejection's (CME) magnetic field evolves on its way to Earth.
- CMEs, plumes of solar material, can disrupt satellite and radio signals or even cause surges in our power grids. By obtaining multipoint measurements from inside a CME, scientists hope to improve their computer models of these solar eruptions.
- Now, as the Sun approaches the solar maximum predicted for 2025, it is far more active, offering a fundamentally different perspective for STEREO-A's observations.

Aditya-L1 Mission

Why in News

- India's first solar mission, Aditya-L1, has recently reached the spaceport in Sriharikota.

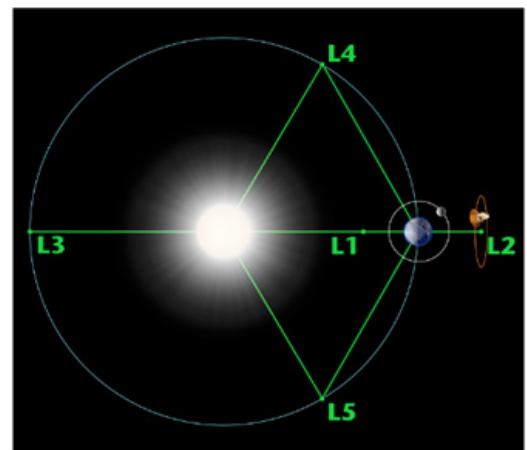
Important Points

- Aditya L1 is the first space-based Indian mission to study the Sun.
- It will be launched by the PSLV-XL launch vehicle.
- The spacecraft shall be placed in a halo orbit around the Lagrange point 1 (L1) of the Sun-Earth system, which is about 1.5 million km from the Earth.
- A satellite placed in the halo orbit around the L1 point has the major advantage of continuously viewing the Sun without any occultation/eclipses.
- This will provide a greater advantage in observing solar activities and their effect on space weather in real-time.
- The spacecraft carries seven payloads to observe the photosphere, chromosphere and the outermost layers of the Sun (the corona) using electromagnetic and particle and magnetic field detectors.
- Using the special vantage point L1, four payloads directly view the Sun and the remaining three payloads carry out in-situ studies of particles and fields at the Lagrange point L1, thus providing important scientific studies of the propagator effect of solar dynamics in the interplanetary medium.
- The other objectives of Aditya L1 mission will be to understand the drivers for space weather (origin, composition and dynamics of solar wind), and identify the sequence of processes that occur at multiple layers (chromosphere, base and extended corona) which eventually leads to solar eruptive events.



Lagrangian points

- Lagrangian points, also known as Lagrange points or liberation points, are specific locations in space where the gravitational forces of two large bodies, such as a planet and its moon or a planet and the Sun, produce enhanced regions of gravitational equilibrium.
- In these points, the gravitational pull from the two bodies creates a stable or quasi-stable region where a third, smaller object can maintain a relatively constant position relative to the larger bodies.
- There are five primary Lagrangian points, labelled L1 through L5, in a Sun-Earth system.



L1 (Lagrange Point 1)

- It was found by mathematician Joseph Louis Lagrange.
- It is located about 1.5 million kilometres inside Earth's orbit, between the Sun and the Earth.
- The L1 point of the Earth-Sun system gives a clear view of the sun all the time, without any occultation/eclipses.
- Once the Aditya L1 mission reaches the L1 Lagrange point, it will be injected to a halo orbit. A halo orbit is a type of orbit that allows the satellite to remain in a stable position between the Earth and the Sun.

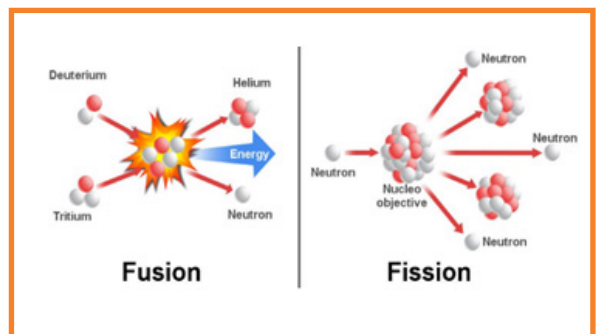
Nuclear Fusion

Why in News

- US scientists achieve net energy gain for second time in fusion ignition breakthrough

Important Points

- US scientists have achieved net energy gain in a fusion reaction for the second time since last December.
- The Energy Department called it a major scientific breakthrough decades in the making that will pave the way for advancements in national defence and the future of clean power.



What is nuclear fusion ?

- Nuclear fusion is the process by which two light atomic nuclei combine to form a single heavier one while releasing massive amounts of energy.
- Fusion reactions occur in a state of matter called plasma- hot, charged gas made of positive ions and free-moving electrons.
- In fusion, two positive nuclei have to come close to each other. However, they repel each other—this phenomenon is called the Coulomb Barrier.
- To overcome this barrier, massive energy is required, which is presently more than the energy generated from the fusion reaction

Significance of Nuclear Fusion

- Clean and safe power as it releases no greenhouse gases.
- 1 kg fusion fuel provides as much energy as 10 million kilograms of fossil fuel.
- Hydrogen, raw material for fusion, is available in abundance while fission uses uranium, which is not an infinite resource.

Nuclear fission vs Nuclear fusion

- Presently, nuclear power plants rely on fission, a process involving the splitting of atoms to generate energy — a central theme in the recent blockbuster film Oppenheimer.
- While nuclear power offers ample clean energy, it has raised safety concerns over the years. However, it is regaining attention amidst global efforts to curtail greenhouse gas emissions and combat climate change.
- In contrast, fusion generates energy by fusing atoms together. This concept has long been admired due to its potential for generating unlimited, clean energy without having to deal with radioactive waste associated with nuclear power or the threat of a meltdown.
- Moreover, the fuel required for fusion is abundantly present on earth--heavy hydrogen atoms found in seawater--eliminating the need for uranium mining.

Why the recent breakthrough is significant?

- Although fusion reactions have been achieved previously, they have often required more energy input than energy output.
- The notable achievement in these recent experiments lies in obtaining more energy output than the input used to initiate the reaction. This level of efficiency has been a desired goal in fusion research.

Why is fusion energy so significant ?

- Less radioactive - The waste produced by nuclear fusion is less radioactive and decays much more quickly.
- No need for fossil fuels - Nuclear fusion doesn't need fossil fuels like oil or gas.
- No GHGs - It also doesn't generate greenhouse gases (GHGs).
- Targeting net zero - Widescale use of nuclear fusion could help countries meet their targets to produce net zero emissions by 2050.
- Availability - Since most fusion experiments use hydrogen, which can be extracted cheaply from seawater and lithium, nuclear fusion offers the possibility of “basically unlimited” fuel.

- Self-limiting process - Fusion is a self-limiting process in which the machine switches itself off if the reaction cannot be controlled.
- Because of its significance, it has been described as the "holy grail" of energy production.

Agnibaan SubOrbital Technological Demonstrator (SOrTeD)

Why in News

- Chennai-based start-up AgniKul Cosmos recently commenced the process of integrating its cutting-edge Agnibaan SubOrbital Technological Demonstrator (SOrTeD) at its private launchpad at the Satish Dhawan Space Centre (SDSC) SHAR in Sriharikota.

Important Points

- The integration process was initiated on Independence Day.
- A successful launch would make AgniKul the second Indian spacetech start-up to send its launch vehicle into space after Skyroot Aerospace.
- Agnibaan SOrTeD is a single-stage launch vehicle powered by AgniKul's patented Agnilet engine, which is an entirely 3D-printed, single-piece, 6 kilonewton (kN) semi-cryogenic engine.
- Unlike traditional sounding rockets that launch from guide rails, Agnibaan SOrTeD will lift off vertically and follow a predetermined trajectory to perform a precisely orchestrated set of manoeuvres during flight.
- The flight events have been configured to validate key technologies integral to the success of the company's upcoming orbital flights.
- This suborbital mission serves as a validation of the success of AgniKul's proprietary autopilot, navigation, and guidance algorithms.
- It also serves as a crucial trial for gauging the launchpad's preparedness for more ambitious undertakings.
- AgniKul, assisted by the Indian Space Research Organisation (ISRO) and the promotion and regulation body IN-SPACe, has ideated and built the launchpad.
- The launchpad and the mission control centre are separated by 4 kilometres, equipped with state-of-the-art technology to ensure independent and uninterrupted operations during the mission countdown.



Features

- It is a customisable launch vehicle that could be launched in one or two stages.
- The rocket stands 18 metres tall and has a mass of 14,000 kg.
- It is capable of carrying payloads up to 100 kg to an altitude of 700 km in five different configurations.
- The rocket's first stage could have up to seven Agnilet engines, depending on the mission, which are powered by Liquid Oxygen and Kerosene.
- The rocket is also designed for launch from more than 10 different launch ports.
- To ensure its compatibility with multiple launch ports, AgniKul has built a launch pedestal named 'Dhanush' that will support the rocket's mobility across all its configurations.
- The Agnilet engine, which powers the entire operation, is the world's sole single-piece 3D-printed engine.

World's first 3D printed engine

- The Agnibaan rocket, initiated by the ground-breaking Agnilet cryogenic engine, is described as a remarkably adaptable, two-stage launch vehicle. It is equipped to haul payloads of up to 100 kilos to a 700 km distance in the LEO.
- Experts have praised the rocket's 'plug-and-play' design that allows for accurate mission configuration.
- The Agnilet engine, which powers the entire operation, is also the first of its kind. It is the world's sole single-piece 3D-printed engine.

- Following its initial trial in early 2021, it was verified at the Vikram Sarabhai Space Centre (VSSC) in Thiruvananthapuram.

Agnikul

- It was founded in 2017 by Srinath Ravichandran, Moin SPM and Professor S.R. Chakravarthy from IIT Madras.
- Agnikul is an IIT Madras incubated startup.
- It became the first Indian company to sign an agreement with ISRO in December 2020.
- The agreement signed under the IN-SPACe initiative sanctioned Agnikul access to the Indian space agency's expertise and facilities to build Agnibaan and its launchpads.

Dark side of the moon

Why in News

- Ahead of the scheduled landing of the Chandrayaan-3 lander on the moon on, the Indian Space Research Organisation (ISRO) released images of the far side of the lunar surface.

Important Points

- The far side is also known as the dark side of the moon as it is always hidden from earth.
- The images were captured by the Lander Hazard Detection and Avoidance Camera (LHDAC) onboard the lander.

About the Dark Side Of the Moon

- The "dark side of the moon" refers to the side of the Moon that is not visible from Earth.
- It's often misunderstood as a place that never sees sunlight, but in reality, both the near side (the one facing us) and the far side (the "dark side") of the Moon experience day and night just like any other celestial body.
- The reason it is referred as the dark side is because it remained largely unseen by humans.
- The Moon's one rotation is equivalent to the Earth's 14 days.
- So we always see the same face of the Moon from the Earth.
- The far side remained hidden until the Soviet spacecraft Luna 3 captured images of it in 1959



Potential of Frozen Water

- As we haven't explored that side before, there is possibility to find water near the south pole of the Moon.
- Water exists as a solid or vapour on the Moon because of the vacuum - the Moon doesn't have enough gravity to hold an atmosphere.
- The frozen water untainted by the Sun's radiation might have accumulated in cold polar regions over millions of years, leading to the accumulation of ice on or near the surface.

Mystery

- Because it was unseen for so long, the far side became shrouded in mystery.
- People wondered if it looked drastically different from the side we knew.

Scientific Interest

- Exploring the far side of the Moon provides an opportunity to study its geological features, impact craters, and other phenomena that might differ from what we see on the near side.

Potential for Radio Telescopes

- Scientists have proposed placing large radio telescopes on the far side to study the early universe and cosmic phenomena more effectively, shielded from our planet's radio noise.

Future Lunar Missions

- The far side could serve as a strategic base for future lunar exploration.
- It provides a unique environment for scientific study and a potential location for future lunar settlements.

Methanotrophs

Why in News

- According to a study, bacteria that consume the greenhouse gas methane could slow the rate of global heating.

Important Points Methane

- Methane is a potent greenhouse gas emitted from energy (natural gas and petroleum systems), industry, agriculture, land use and waste management activities.
- The agriculture sector is the largest source of methane emissions due to livestock manure and gastroenteric releases.
- Methane has more than 85 times the warming power of carbon dioxide over the first 20 years after it reaches the atmosphere, and poses a particular problem as a greenhouse gas.
- Atmospheric methane has been rising rapidly over the past 15 years, reaching record highs, and currently accounts for at least 30% of total global heating.

About methanotrophs

- Researchers are proposing a method of removing methane by using a group of bacteria known as methanotrophs to naturally convert methane to carbon dioxide and biomass.
- All the bacteria in this group eat methane, removing it from air and converting part of it to cells as a source of sustainable protein.
- Researchers found a strain of bacteria within this group called methylotuvimicrobium buryatense 5GB1C that can remove methane efficiently even when it is present in lower amounts.
- If it became widespread, the technology has the potential to help slow global heating.
- Any current emissions reduction strategies that enhance bacterial activity in natural communities may also result in increased nitrous oxide (N₂O) emission, which has 10 times the global heating potential than that of methane.
- This methanotrophic bacteria-based technology does not produce nitrous oxide emissions.
- Recent projections predicted that global heating can be reduced 0.21C to 0.22C by removing 0.3 to 1 petagrams of methane by 2050.

Where these bacteria thrive ?

- This group of bacteria thrive in environments with high levels of methane (between 5,000 and 10,000 parts per million (ppm)).
- The normal concentrations in our atmosphere have much lower levels of only about 1.9 ppm of methane.
- But certain areas such as landfills, rice fields and oilwells emit higher concentrations of about 500 ppm.

How the process works ?

- The strain's high methane consumption rate is probably due to a low energy requirement and greater attraction for methane – more than five times more than that of other bacteria.
- The bacteria oxidise the methane to CO₂ (a much less powerful greenhouse gas).

Challenges :

- The biggest barrier to implementation now is that there is a need to increase the methane treatment unit 20-fold.
- If it is achieved, then the biggest barriers become investment capital and public acceptance.
- To implement methane-eating bacteria on a mass scale, thousands of high-functioning reactors will be needed.

Gender Inclusion Fund (GIF)

Why in News

- Recently, the Minister of State for Education informed the Lok Sabha about the Gender Inclusion Fund (GIF), mentioned in the National Education Policy (NEP), 2020.

Important Points

- The fund will be utilised to ensure that all kids receive a high-quality education.
- It will also be used to guarantee that amenities such as secure and sanitary vending machines are included on GIF's infrastructure checklist.
- The NEP focuses on 'Equitable and Inclusive Education' which reverberates the idea that no child should be left behind in terms of educational opportunity because of their background and socio-cultural identities.
- It has taken into account the concerns of the Socio-Economically Disadvantaged Groups (SEDGs) which includes female and transgender individuals.
- NEP prescribes to approach gender as a cross-cutting priority to achieve gender equality in education with the partnership of states and local community organizations.
- The objectives of NEP for equitable and quality education for girl children are being met through specific provisions under Samagra Shiksha 2.0 by allocating dedicated resources for Socio-Economically Disadvantaged Groups (SEDGs).
- Under Samagra Shiksha, various interventions have been targeted for providing quality education to girls, which include :
 - Opening of schools in the neighbourhood to make access easier for girls,
 - Free uniform and text-books to girls up to class VIII,
 - Additional teachers and residential quarters for teachers in remote/hilly areas,
 - Appointment of additional teachers including women teachers,
 - Stipend to CWSN girls from class I to class XII, separate toilets for girls,
 - Teachers' sensitization programmes to promote girls participation,
 - Gender-sensitive teaching-learning materials including text books etc.



MSCI Index

Why in News

- Rural Electrification Corporation Limited under the Ministry of Power, has secured a coveted place in the esteemed Morgan Stanley Capital International (MSCI) Global Standard Index, effective from 1st September 2023.

Important Points

- A recent report by Nuvama Alternative & Quantitative Research highlighted that REC stocks were considered strong contenders for the November 2023 review.
- The analysis conducted by Nuvama Alternative & Quantitative Research anticipates REC's inflows to be around \$184 Million.

- The inclusion of REC in MSCI solidifies REC's status as a leading player in the financial sector and market, and opens up new horizons to expand its reach and influence on a global scale and level.
- The entry of REC into the MSCI index is a commendable one and reinstates its stature as one of the premier financial organizations across the globe.



MSCI Index

- It is owned by the multinational investment management and financial services company Morgan Stanley.
- It is an investment research firm that provides stock indexes, portfolio risk and performance analytics, and governance tools to institutional investors and hedge funds.
- It is a leading provider of critical decision support tools, including stock indexes, and services for the global investment community.
- MSCI indices facilitate the construction and monitoring of portfolios in a cohesive and complete manner, avoiding benchmark misfit. It has over 160,000 indices in its portfolio.
- MSCI has indexes for countries, regions, emerging markets, developed markets, small cap, all cap and even Islamic indexes.
- It selects stocks for its equity indexes that are easily traded and have high liquidity, with companies having high free float getting more weightage.
- It prefers stocks that have active investor participation, and are without owner restrictions.

MSCI India Index

- The MSCI India Index is designed to measure the performance of the large and mid-cap segments of the Indian market.
- With 113 constituents, the index covers approximately 85% of the Indian equity universe.
- The index is reviewed quarterly.

Rural Electrification Corporation Limited

- REC Limited is an NBFC focusing on Power Sector Financing and Development across India.
- Established in 1969, REC Limited has completed over fifty years of operations.
- It provides financial assistance to state electricity boards, state governments, central/state power utilities, independent power producers, rural electric cooperatives and private sector utilities. Its business activities involve financing projects in the complete power sector value chain; for various types of projects including Generation, Transmission, Distribution and Renewable Energy. REC's funding illuminates every fourth bulb in India.
- REC has recently diversified into financing infrastructure and logistics sector as well.

National Social Assistance Programme

Why in News

- Recently, the Comptroller and Auditor General of India submitted the report on the performance audit of the National Social Assistance Programme from 2017-18 to 2020-21.

Important Points

- It is a social security and welfare programme to provide support to aged persons, widows, disabled persons and bereaved families on death of primary bread winner, belonging to below poverty line households.

Eligibility

- For getting benefits under NSAP the applicant must belong to a Below Poverty Line (BPL) family according to the criteria prescribed by the Govt. of India.
- The other eligibility criteria and the scale of central assistance under the sub - schemes of NSAP are as follows
- Presently NSAP comprises of five schemes, namely –

- Indira Gandhi National Old Age Pension Scheme (IGNOAPS): The eligible age for IGNOAPS is 60 years. The pension is Rs.200 p.m. for persons between 60 years and 79 years. For persons who are 80 years and above the pension is Rs.500/- per month.
- Indira Gandhi National Widow Pension Scheme (IGNWPS): Widow aged 40 years will get pension is Rs.300 per month. After attaining the age of 80 years, the beneficiary will get Rs.500/- per month.
- Indira Gandhi National Disability Pension Scheme (IGNDPS): An individual aged 18 years and above and the disability level has to be 80% will get Rs.300 per month and after attaining the age of 80 years, the beneficiary will get Rs 500/- per month.
- National Family Benefit Scheme (NFBS) : In the event of death of the bread – winner Rs. 20000/- will be given as a lumpsum assistance to the bereaved household. The breadwinner should have been between 18-60 years of age.
- Annapurna: The scheme aims at provide food security to meet the requirements of those eligible old aged persons who have remained uncovered under the IGNOAPS. Under this programme 10 kgs of food grains (wheat or rice) is given per month per beneficiary.
- Nodal Ministry: Ministry of Rural Development



CAPF

Why in News

- 436 CAPF personnel die by suicide in three years, government sets up task force

Important Points

- The Union Home Ministry informed the Rajya Sabha that it has set up a task force to suggest remedial measures for the prevention of suicides and fratricides in the Central Armed Police Forces (CAPF).

The function of the Taskforce

- Analysing behavioural aspects: The task force will draw a plan to identify relevant risk factors and protective factors at the individual level; look at the existing and futuristic protective factors and study prevention strategies and also conduct research and interact with domain experts.
- To identify the reasons for Suicide: Most times the issues that lead to stress and instances of suicide among the troops are related to problems they face back home while some are related to service conditions and leaves.
- Suggestion asked for remedial measures: The task force has also been asked to find if any changes or modifications can be done in the deployment pattern of the troops and some way in which access to mobile phones can be limited during deployment phases to check instances where troops take the extreme step of ending their lives.
- Spreading awareness of consequences: The task force also looks into the aspects of improving awareness about suicide prevention, policies to reduce the harmful use of alcohol and drugs, the importance of mental well-being etc.

Government Interventions

- Various steps have been taken by the Armed Forces to create a healthy/appropriate environment for their Officers and Other Ranks. Some of these steps are as under:-
- Provision of better quality facilities such as clothing, food, married accommodation, travel facilities, schooling, recreation etc. and periodic welfare meeting.
- Conduct yoga and meditation as a tool for stress management.
- Training and deployment of psychological counsellors.
- Institutionalization of projects 'MILAP' and 'SAHYOG' by the Army in Northern & Eastern Command to reduce stress among troops.
- A 'MansikSahayata Helpline' has been established by Army & Air Force to take professional counselling.



- Mental Health Awareness is provided during pre-induction training.
- Formation of Military Psychiatry Treatment Centre at INHSAsvini and establishment of Mental Health Centres in Mumbai, Visakhapatnam, Kochi, Port Blair, Goa and Karwar.

TB Incidence

Why in News

- Good nutrition reduces TB incidence, curbs mortality, says new Lancet study

Important Points

- ICMR backed study provides first evidence that providing extra nutrition effectively prevents tuberculosis (TB) cases and mortality in India.
- Jharkhand was chosen as a trial site because it has a high burden of TB and second highest level of multi-dimensional poverty.

Key Findings

- New evidence from Reducing Activation of Tuberculosis by Improvement of Nutritional Status (RATIONS) trial shows that improved nutrition among contacts of patients with infectious lung TB can reduce the incidence of all forms of TB by 40 per cent and of infectious TB by nearly 50 per cent.
- Significantly, it also found that early weight gain in underweight patients with TB can reduce their risk of mortality by 60 per cent.
- An early weight gain in the first two months was associated with 60 per cent lower risk of TB mortality.
- The other benefits to patients were higher treatment success, better weight gain, low rates of loss to follow up.
- As per the trial, 10 345 household contacts of 2,800 TB patients were randomised to receive regular food parcels and additional micronutrients –750 kcal, 23 gm proteins. A total of 5,621 people were given the nutrient-dense food for a year while 4,724 people received food parcels with no extra nutrition. At the end of the trial, there was a 39 per cent reduction in TB incidence in the intervention group versus the control one.
- The second study followed 2,800 patients with TB over six months and found that weight gain during the extra nutrition treatment was associated with reduced risk of mortality, especially within the first two months when deaths occur.
- Instantaneous risk of death was reduced by 13 per cent for a one per cent weight gain & 61 per cent for 5 percent weight gain.



UPSC

September 2023

THE HARSH COUGH

Tuberculosis is curable and preventable but India accounts for 25% of the world's cases. Every year, India reports 15 lakh new cases

WHAT IS TUBERCULOSIS?

TB is an infectious, airborne disease that commonly affects the lungs. It is caused by the *Mycobacterium tuberculosis* bacteria

WHAT ARE THE SYMPTOMS?

- Cough with sputum and blood
- Chest pain
- Weakness
- Weight loss
- Fever
- Night sweats

HOW DOES IT SPREAD?

Through the air – if an infected person coughs, sneezes or speaks and others breathe in the air

ESTIMATED NEW TB CASES (ALL FORMS) PER 100,000 POPULATION

- 0-24
- 25-49
- 50-149
- 150-299
- > 300
- No estimate

1/3 of the world's population has latent TB, which means they have been infected by the bacteria but are not ill and cannot transmit the disease

PREVALENCE

People registered for treatment (2011)

India	15 lakh
TN	79,830

STUDY FINDINGS

No. of TB patients	18,477	Incidence among elderly	259
No. over 60	1,485	Incidence in other patients (per 100,000 population)	142
Male-female ratio in elderly	4:1		

WHO IS AT RISK?

- Children
- People with HIV
- Smokers
- Elderly

Treatment is less effective in people with diabetes, hypertension and cardio vascular diseases

Nutrition and Tuberculosis

- More than two-thirds of trial participants were tribals, most of whom were accessing ration from the PDS.
- Undernutrition (BMI < 18.5 kg/m²) was prevalent in four out of five patients, with severe undernutrition (BMI < 16 kg/m²) in nearly half of these.
- Prevalence of HIV, diabetes, MDR-TB was low but alcohol and tobacco use was high.
- Nearly one per cent of patients were hypotensive, hypoxic, or were unable to stand, indicating need for in-patient care.
- One of three contacts across all ages had undernutrition at enrolment.
- There was a 39 per cent reduction of incidence of all forms of TB and a 48 per cent reduction of incidence of infectious TB in the intervention group of families.



Why Jharkhand was chosen for Trial ?

- Jharkhand was chosen as a trial site because it has a high burden of TB (52,179 cases notified in 2021, and an annual case notification of 130 of 100 000) and the second highest level of multi-dimensional poverty.
- All participants received a monthly 10 kg food basket (rice, pulses, milk powder, oil) and multivitamins for six months.
- In family members, the intervention group received 5 kg rice and 1.5 kg pulses per head per month (50 per cent of these if families had a child less than 10-year-old).

What is Tuberculosis ?

- Tuberculosis is an infection caused by Mycobacterium tuberculosis.
- It can practically affect any organ of the body. The most common ones are lungs, pleura (lining around the lungs), lymph nodes, intestines, spine, and brain.
- Transmission: It is transmitted from person to person through air. It is treatable and curable disease.
- Symptoms: Common symptoms of active lung TB are cough with sputum and blood at times, chest pains, weakness, weight loss, fever and night sweats.
- As per WHO Global TB report 2022, TB cases are attributable to five risk factors — undernourishment, HIV infection, alcohol use disorders, smoking and diabetes.
- Currently, Bacille Calmette-Guerin (BCG) is only licensed vaccine available for prevention of TB.

Status of TB in India

- Most of the TB statistics for India are collected by the government National Tuberculosis Elimination Program
- The NTEP then passes their figures to the World Health Organisation (WHO).
- The WHO TB statistics for India for 2021 give an estimated incidence figure of 2,590,000 million cases
- An estimate of 2.8 million TB cases with TB killing more than 4,00,000 occur in India every year

What are the measures taken by India to eradicate TB ?

- The National Tuberculosis Elimination Programme (NTEP) - Aims to strategically reduce TB burden in India by 2025.
- It was previously known as Revised National Tuberculosis Control Programme (RNTCP).
- The government reached over a billion people in 632 districts/reporting units.
- The National Strategic Plan for TB Elimination – It was launched to achieve the target of ending TB by 2025 in a mission mode.
- It is a multi-pronged approach which aims to detect all TB patients with an emphasis on reaching TB patients seeking care from private providers and undiagnosed TB in high-risk populations
- Ni-kshay Poshan Yojana (NPY) (Nutritional Support to TB) - It helps to meet the nutritional requirements of TB patients, especially the underserved
- From 2018 till present, around Rs. 1,707 crore has been disbursed to more than 65 lakh people on TB treatment across the country
- Patient Provider Support Agencies (PPSA) - To engage the private sector, Patient Provider Support Agencies (PPSA) have been rolled out across 250 districts through the domestic setup and JEET initiative
- Universal Drug Susceptibility Testing (UDST) - To ensure every diagnosed TB patient is tested to rule out drug resistance before or at the time of treatment initiation itself.
- Pradhan Mantri TB Mukh Bharat Abhiyaan - To bring together all community stakeholders to support those on TB treatment and accelerate the country's progress towards TB elimination.
- Ayushman Bharat - Health and Wellness Centres - To decentralize comprehensive primary healthcare including TB care services at the grassroots level.
- Bedaquiline and Delamanid - Newer drugs like Bedaquiline and Delamanid have also been made available for management of DRTB.

What are the global measures to eradicate TB ?

- End TB Strategy – by World Health Organization (WHO)
- It serves as a blueprint for countries to reduce TB incidence by 80%, TB deaths by 90%, and to eliminate catastrophic costs for TB-affected households by 2030.
- World Development Report (1993) – Published by the World Health Organization (WHO).

- The 1993 World Development Report labelled TB treatment for adults as the best buy among all developmental interventions.
- The Global Fund - A worldwide movement to defeat HIV, TB and malaria and ensure a healthier, safer, more equitable future for all.
- The Stop TB Partnership - Brings together expertise from a broad spectrum of country, regional, and global partners in our shared mission to revolutionize the TB space and end TB by 2030
- Sustainable Development Goal 3 - To end TB epidemic by 2030

The new non-poor

Why in News

- Prime Minister of India said in his Independence Day address that in the first five-year term of his government, 13.5 crore of poor people have broken free from the chains of poverty and entered the new middle class.

Important Points

- The 13.5-crore number cited by the PM appears in the second National Multidimensional Poverty Index report that was published by Niti Aayog recently.
- The 2023 edition of the index uses data from the latest round of the National Family Health Survey (2019-21), and captures changes in multidimensional poverty between the survey periods of NFHS-4 (2015-16) and NFHS-5 (2019-21).
- The poverty headcount ratio, that is, the proportion of multi-dimensionally poor in the country, fell from around 25% to just under 15% between the two rounds of NFHS.
- In absolute terms, this implies that 135 million (or 13.5 crore) Indians escaped multidimensional poverty in this period.

About Multidimensional Poverty Index (MPI)

- The national MPI measures deprivations across the three dimensions of : Health and nutrition:
- Within health, it tracks three variables: nutrition, child and adolescent mortality, and maternal health.

Education

- In education, it tracks two variables: years of schooling, and school attendance.

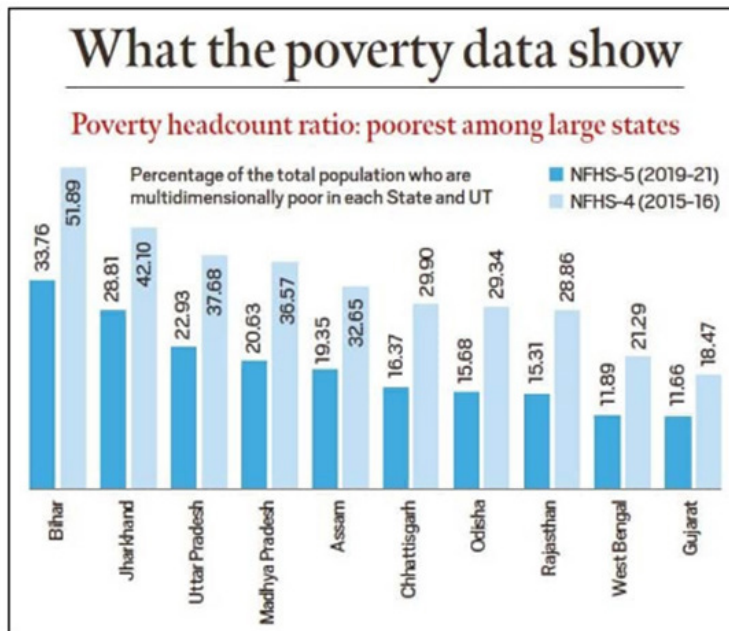
Standard of living

- In standard of living, it tracks seven variables such as sanitation, drinking water, bank account, etc.
- The index is based on the methodology used by the Oxford Poverty and Human Development Initiative (OPHI) and United Nations Development Programme (UNDP) to construct the Global MPI.
- OPHI and UNDP are technical partners in the formulation of the national index.
- But India's MPI is not exactly the same as the Global MPI.
- For instance, India's MPI has 12 variables, while the Global MPI has 10.
- The two additional variables in India's MPI are maternal health and bank account.
- Reduction in poverty (13.5 crore in the period between the two NFHS rounds) compare with India's past record:
- This is a multidimensional poverty index and, as such, is not comparable to India's traditional and official way of estimating poverty.
- The Global MPI 2023 report states that 415 million people in India moved out of poverty between 2005- 06 and 2019-21.
- The Global MPI pegs India's poverty ratio at 16.4% as against 14.96% in Niti Aayog's MPI.
- This difference is on account of the two additional metrics, and some differences in definitions.

How has poverty been estimated in India traditionally ?

- From the time of Dadabhai Naoroji's 1901 book Poverty and Un-British Rule in India, poverty has been estimated using a monetary measure.
- The idea has been to arrive at an amount of money that is considered necessary to either eat a subsistence diet (Naoroji's approach) or to achieve a minimum standard of living.

- Since data on income was difficult to collect, India used regular (five-yearly) consumption expenditure surveys (which showed how much people were spending on consumption).
- Based on this data, several expert committees — led by D T Lakdawala (1993), Suresh Tendulkar (2009), and C Rangarajan (2014) — drew a “poverty line”.
- The line is the level of consumption expenditure (stated in rupees) that divides those who are poor from those who are not.
- India’s last official poverty statistics are from 2011.
- The data have not been updated because the government junked the consumption expenditure survey of 2017-18.
- That survey showed a decline in rural consumption and, as such, pointed to an increase in abject poverty.

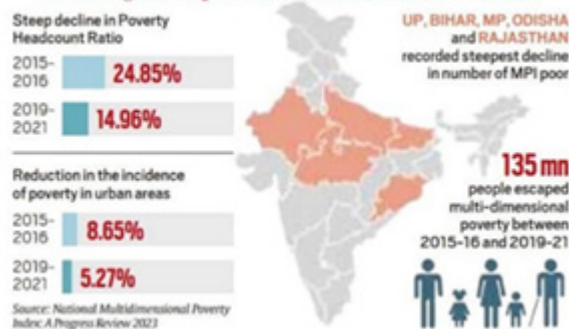


Impact on India’s middle class

- There is no official definition of the middle class in India.
- It is difficult to say whether those who escape poverty necessarily join the middle class, or to what extent.
- Estimates of India’s middle class provided by private research organisations peg the middle class at income levels that are considerably higher than those of the people who are coming out of poverty.
- In a report, ‘The rise of India’s middle class’, People Research on India’s Consumer Economy (PRICE) divided all households into four categories:
 - Destitutes,
 - Aspirers,
 - Middle Class and
 - Rich.

- According to PRICE’s survey, as of 2021, out of a population of 1,416 million:
 - 196 million Indians were categorised as ‘Destitutes’,
 - 432 million were the ‘Middle Class’, and
 - 732 million were ‘Aspirers’.
- Households which are classified as Middle Class have an annual income in the range of Rs 5 lakh to Rs 30 lakh (at 2020-21 prices).
- Destitute households were those with an annual income less than Rs 1.25 lakh.

MPI Progress Report 2023 (Between NFHS-4 and 5)



Microplastics

Why in News

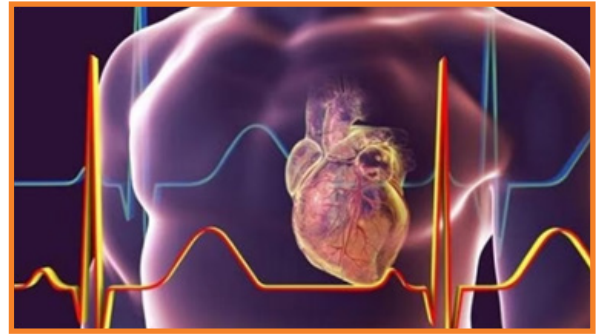
- A team of scientists in China recently found microplastics in the human heart for the first time.

Important Points

- Microplastics are tiny bits of various types of plastic found in the environment.
- Notably, microplastics can be lesser than 5 millimeters wide and can enter the human body through the mouth, nose and other cavities in the body.
- They are a result of the fragmentation and degradation of larger plastic items, as well as the direct release of

tiny plastic particles, often intentionally added to consumer products like cosmetics and cleaning agents.

- The name is used to differentiate them from “macroplastics” such as bottles and bags made of plastic.
- There is no universal agreement on the size that fits this bill — the S. NOAA (National Oceanic and Atmospheric Administration) and the European Chemical Agency define microplastic as less than 5mm in length.
- Microplastics have been claimed to be indirectly responsible for diseases like obesity, diabetes and chronic liver disease as they cause changes in the gastrointestinal tract.



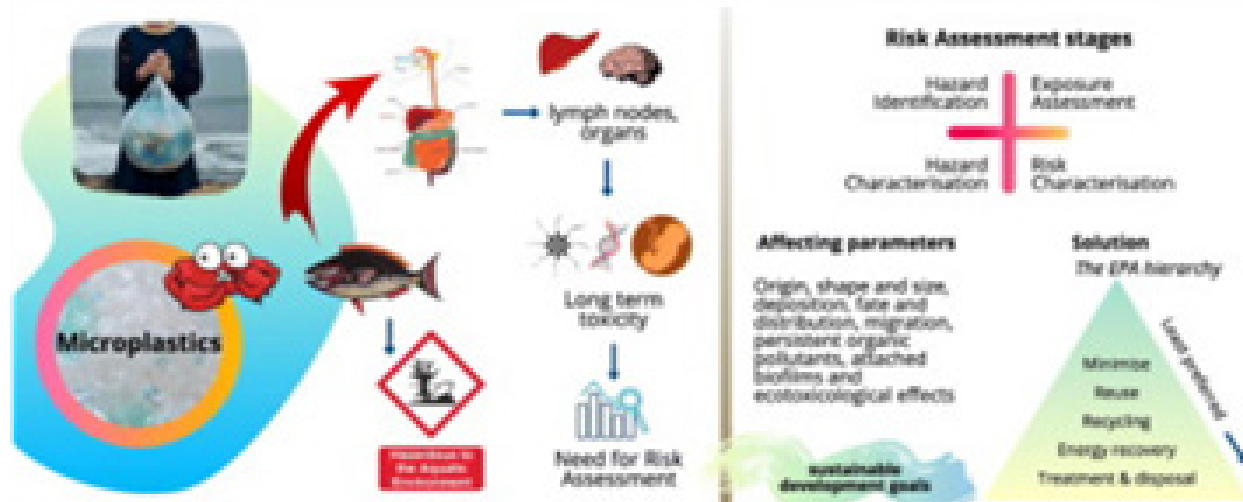
Types of microplastics

Primary microplastics :

- They are tiny particles designed for commercial use, such as cosmetics, as well as microfibers shed from clothing and other textiles, such as fishing nets.
- They enter the environment directly through any of various channels—for example, product use, unintentional loss from spills during manufacturing or transport, or abrasion during washing.

Secondary microplastics :

- They are particles that result from the breakdown of larger plastic items, such as water bottles.
- This typically happens when larger plastics undergo weathering, through exposure to, for example, wave action, wind abrasion, and ultraviolet radiation from sunlight.



Environmental Impact :

- Microplastics are not biodegradable.
- Thus, once in the environment, primary and secondary microplastics accumulate and persist.
- They can be ingested by marine organisms, leading to potential harm to aquatic life and bioaccumulation along the food chain.
- They can also carry toxic chemicals and pollutants, posing additional risks to organisms and ecosystems.

Green Initiatives from India :

- National Dashboard on Elimination of Single Use Plastic (SUP) and Plastic Waste Management by MoEFCC to bring all stakeholders including Central Ministries/ Departments, State/UT Governments at one place and track the progress made for elimination of SUP and effective management of plastic waste.
- Extended Producer Responsibility (EPR) Portal by Central Pollution Control Board {CPCB} for Plastic Packaging, improving accountability, traceability, transparency and facilitating ease of reporting compliance to EPR Obligations by Producers, Importers and Brand-owners
- Mobile App for Single Use Plastics Grievance Redressal by CPCB to empower citizens to check sale/ usage/ manufacturing of SUP in their area and tackle the plastic menace.
- Monitoring module for Single Use Plastics (SUPs) by CPCB for local bodies, State Pollution Control Boards

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(SPCBs) and CPCB, to inventorize details of SUP production/ sale & usage in commercial establishments at district level, and on-ground enforcement of ban on SUP.

- Industrial production of Graphene from Waste Plastic by National Institute of Health and Environment & National Research Development Corporation to promote more industries to come forward to upcycle plastic waste.

Havana Syndrome

Why in News

- The Central government has told the Karnataka High Court that it will look into the matter of the ‘Havana Syndrome’ in India



Important Points

- Havana Syndrome refers to a set of mental health symptoms that are said to be experienced by United States intelligence and embassy officials in various countries.
- In general, the word ‘syndrome’ simply means a set of symptoms.
- It does not mean a unique medical condition, but rather a set of symptoms that are usually experienced together whose origins may be difficult to confirm.
- The Havana Syndrome typically involves symptoms such as hearing certain sounds without any outside noise, nausea, vertigo and headaches, memory loss and balance issues.

Causes of Havana Syndrome

- Study by scientists in the US and medical examination of the victims began to suggest that they may have been subjected to high-powered microwaves that either damaged or interfered with the nervous system.
- It was said to have built pressure inside the brain that generated the feeling of a sound being heard.
- Greater exposure to high-powered microwaves is said not only to interfere with the body’s sense of balance but also to impact memory and cause permanent brain damage.
- It was suspected that beams of high-powered microwaves were sent through a special gadget that Americans then called a “microwave weapon”.

MEDICAL SYMPTOMS RESULT OF ESPIONAGE WARS?

<p>WHAT IS HAVANA SYNDROME?</p> <p>Havana syndrome is a set of medical signs and symptoms first reported in late 2016 by American and Canadian embassy staff in Havana, Cuba, and subsequently in other countries including the US, Austria, Germany, and now India</p>	 <p style="font-size: small; text-align: center;">The apartments in Guangzhou where US diplomats developed the symptoms</p>	<p>WHAT DO US INTEL AGENCIES SAY?</p> <p>The US intel services have not reached a consensus on a formal determination of the cause of the Havana syndrome though unnamed sources in intelligence and in two presidential administrations have expressed suspicions to the press that Russian military intelligence is responsible</p>
<p>WHEN WAS IT FIRST DETECTED?</p> <p>> In 2016, a number of Canadians and Americans living in Havana complained of concussion-like symptoms, including headaches, dizziness, nausea and difficulty in concentrating. Some described hearing buzzing or high-pitched sounds before falling sick</p> <p>> In 2018, US diplomats in China reported problems similar to those reported</p>		<p>WHAT DO EXPERTS SAY?</p> <p>While there is no expert consensus on the exact cause, National Academies of Science, Engineering, and Medicine expert committee concluded in December 2020 that microwave energy (especially directed radi frequency energy) ‘appears to be the most plausible mechanism in explaining these cases among those that the committee considered’ but that ‘each possible cause remains speculative’. The Biden admin has started calling them ‘unexplained health incidents (UHIs)’</p>

Source: National Academy of Sciences & media reports

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Chapter

7

International Relation

Amazon Cooperation Treaty Organization

Why in News

- Recently, assembling in the Brazilian city of Belem, the members of the Amazon Cooperation Treaty Organization sought to chart a common course on how to combat climate change.

Important Points

- It is an intergovernmental organization formed by the eight Amazonian countries by signing the Amazon Cooperation Treaty (ACT).
- The Amazon Cooperation Treaty was drafted and signed on July 3, 1978.
- In 1995, the eight nations decided to create the Amazon Cooperation Treaty Organization (ACTO), to strengthen and implement the objectives of the Amazon Cooperation Treaty.
- Member countries: Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela.
- It was founded to promote the preservation of the Amazon basin and regulate Amazonian development through international cooperation.
- It is the only socio-environmental block in Latin America.
- It works in different dimensions within the framework of the implementation of the ACT: political-diplomatic, strategic, and technical, building synergies among governments etc.
- It has four official languages: Dutch, English, Portuguese, and Spanish.
- The Directorate of the Permanent Secretariat and the coordination of the projects plan and execute their activities in close collaboration and through consultations with the Member Countries.



Amazon Rainforest

- It is large tropical rainforest occupying the drainage basin of the Amazon River and its tributaries in northern South America.
- It is bounded by the Guiana Highlands to the north, the Andes Mountains to the west, the Brazilian central plateau to the south, and the Atlantic Ocean to the east.

Signed by officials from eight nations, the Belem Declaration also :

- Condemns the proliferation of protectionist trade barriers, which signatories said negatively affects poor farmers in developing nations and hampers the promotion of Amazon products and sustainable development.
- Calls on industrialized nations to comply with their obligations to provide massive financial support to developing nations.
- Calls for the strengthening of law enforcement cooperation. Commits authorities to exchanging best practices and intelligence about specific illicit activities, including deforestation, human rights violations, trafficking of fauna and flora and the sale and smuggling of mercury, a highly toxic metal widely used for illegal gold mining that pollutes waterways.

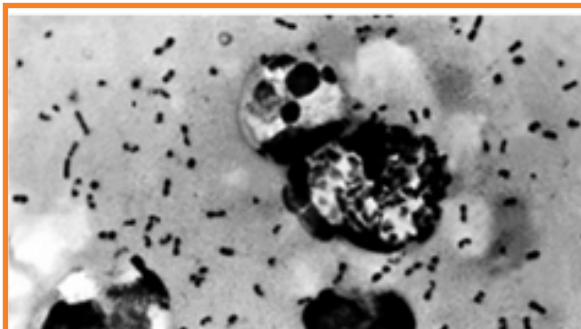
Bubonic Plague

Why in News

- China's northern region of Inner Mongolia recently reported two cases of bubonic plague.

Important Points

- Plague is an infectious disease caused by a specific type of bacterium called *Yersinia pestis*.
- pestis* can affect humans and animals and is spread mainly by fleas.
- Bubonic plague, also known as Black Death, is one type of plague. It gets its name from the swollen lymph nodes (buboes) caused by the disease.



The other types of plague are

- Septicaemic plague, which happens when the infection goes all through the body.
- Pneumonic plague, which happens when the lungs are infected.

Symptoms : Bubonic plague symptoms include

- Sudden high fever and chills.
- Pains in the areas of the abdomen, arms and legs.
- Headaches.
- Large and swollen lumps in the lymph nodes (buboes) that develop and leak pus.

Transmission :

- Pest is spread mostly by fleas on rodents and other animals.
- It is transmitted between animals and humans by the bite of infected fleas, direct contact with infected tissues, and inhalation of infected respiratory droplets.
- It's an example of a disease that can spread between animals and people (a zoonotic disease).

Treatment :

- It can be treated and cured with antibiotics.
- Antibiotics that treat bubonic plague include Ciprofloxacin, levofloxacin, moxifloxacin, Gentamicin and Doxycycline.
- It can be fatal if it's not treated.

Murmansk Port

Why in News

- India's engagement with Russia's Arctic region has been strengthening with India-bound goods constituting the maximum share of cargo handled this year by Murmansk Port.

Important Points

- In the first seven months of 2023, Murmansk port, the main northern gateway of Russia and a transshipment hub, handled eight million tonnes of cargo.
- Of this, India accounted for 35% of cargo.
- India was also getting involved in the Northern Sea Route (NSR), which is the shortest shipping route connecting the western part of Eurasia and the Asia-Pacific region.
- The record supplies of energy resources for the Indian economy are possible due to such a reliable and safe transport artery as the NSR.



Murmansk Port

- Murmansk Port is a major seaport located in northwestern Russia, specifically in the city of Murmansk.
- The seaport of Murmansk is one of the largest ice-free ports in Russia.
- The port was established in 1916 as a supply point for the Russian military during World War I.
- It is situated in the city of Murmansk, which is the largest city north of the Arctic Circle in Russia.
- It is located on the Kola Peninsula on the shores of the Barents Sea.
- It is about 2,000 km northwest of Moscow.
- The port serves as a crucial gateway to the Arctic region.
- The port is an important node along the Northern Sea Route, a shipping route that connects Europe and Asia via the Arctic Ocean.
- Its ice-free waters enable year-round maritime activities, making it an important hub for shipping and trade in the Arctic.
- The main port capabilities are located on the western coast of Kola Bay, among them the mooring berths of the commercial port (including passenger area), fishing port, ship-repair yard, shipyard, oil terminal, and FSUE Atomflot premises.

Kola Peninsula

- It is situated in northwest Russia which is one of the most important economic regions in the circumpolar North.
- The region contains valuable natural resources, including a wide variety of mineral and fish resources, and is proximate to the large gas fields of the Barents Sea.
- A large population, industrial complexes, and military infrastructure are also characteristic of the region.

Drilling in the North Sea

Why in News

- U.K. Prime Minister Rishi Sunak recently backed plans for new fossil fuel drilling off Britain's coast, worrying environment experts even as the world continues its stride towards irreversible climate change.

Important Points

- The North Sea Transition Authority (NTSA), responsible for regulating oil, gas and carbon storage industries, expects the first of the new licences to be awarded in autumn, with the round expected to award over 100 licences in total.
- Offshore drilling is the process of extracting petroleum and natural gas from the seabed using a fixed or mobile platform located off the coast in the open ocean and deepwater regions.



A short history of drilling in the U.K. North Sea

- Geographically, the North Sea lies between England and Scotland on its west, the Netherlands, Belgium, and France on its south, and Norway, Denmark, and Germany on its east.
- The 1958 Geneva Convention on the Continental Shelf was the first international legislation to establish the rights of countries over the continental shelves adjacent to their coastlines and paved the way for exploration in the North Sea.
- The treaty came into force in 1964, shortly after the U.K. Parliament passed the Continental Shelf Act.
- The Act provides for exploration and exploitation of the continental shelf based on the 1958 convention.
- It delineated the jurisdiction the U.K. had over oil and gas resources under the seabed near its shores.
- The first licence for exploration in the U.K. North Sea was awarded to British Petroleum (BP) in September 1964.
- In the next 15 years, BP started more than 15 fields in the U.K. North Sea (and four in the Norwegian North Sea).
- More British, European, and U.S. companies continued their exploration of the North Sea, and by the 1980s, there were over a hundred installations looking for oil and gas.

- The production from the North Sea peaked in 1999, when it produced 1,37,099 thousand tonnes of crude oil and natural gas liquids.
- By 2022, the total production declined to 38,037 thousand tonnes.

Offshore Drilling Advantages

- **Increased Oil Production:** Offshore drilling greatly increases the oil production and the amount of oil that we have to use for fuel and energy. This stimulates the economy and keeps our society going.
- **More Jobs:** Offshore drilling requires many skilled people to operate the equipment. It creates an entire world of jobs that benefit thousands of people and their families. There are entire towns set up to revolve around and cater to the offshore drilling workers.
- **Lower Oil Prices:** If oil is being produced on home soil, then foreign countries have no say in the prices of the oil, which are often inflated. Transportation costs are also cut drastically with offshore drilling, further lowering the price for oil.

Offshore Drilling Disadvantages

- **Environmental hazards:** The deepwater horizon incident killed 11 people and exposed more than 45,000 square miles of the gulf of Mexico to crude oil.
- **Exposure to crude oil in just small amounts is toxic to most forms of marine life.** In this one incident, 4.9 million barrels of oil spilled into gulf waters. More than 15,000 bird species, 1,200 fish species, 2,900 mollusc and crustacean species, and 29 marine mammal species were threatened by this incident.
- **Global warming and climate change:** Drilling in seas and oceans for fossil fuels not only aggravates the threat of climate change but also warms oceans and raises sea levels.
- **Loss of biodiversity:** Offshore drilling is associated with a direct risk to marine biodiversity, as well as with indirect risks to coral reefs, shellfish and the marine ecosystem from acidic waters because of carbon pollution settling into oceans.

Is the U.K. Honouring its Climate Commitments ?

- In the U.K., National Adaptation Programmes are statutory programmes that the government must follow to help prepare the country for climate change, as required under the Climate Change Act.
- The 2nd National Adaptation Programme covered the period of 2018 - 2023. According to reports, there is very limited evidence of the implementation of adaptation at the scale needed to fully prepare for climate risk.
- This means, K.'s climate action is not consistent with the Paris Agreement and its Nationally Determined Contributions (NDCs) and long-term targets do not represent a fair share of the global effort to address climate change.
- Licensing new oil and gas extraction plans is incompatible with the 1.5°C limit in the rise in temperature.

The North Sea Transition Authority (NTSA)

- The North Sea Transition Authority (NSTA), known as the Oil and Gas Authority (OGA) until March 2022, is a private company limited by shares wholly owned by the Secretary of State for Energy Security and Net Zero.
- It is responsible for maximising the economic recovery of oil from the North Sea.
- It is empowered to license and regulate activity in relation to oil and gas in the United Kingdom, including oil and gas exploration, carbon capture and storage, and offshore gas storage.

The NSTA's role is to take the steps necessary to :

- secure that the maximum value of economically recoverable petroleum is recovered from the strata beneath relevant UK waters; and, in doing so,
- take appropriate steps to assist the Secretary of State in meeting the net zero target, including by reducing
- as far as reasonable in the circumstances greenhouse gas emissions from sources such as flaring and venting and power generation, and supporting carbon capture and storage projects.

BRICS summit 2023

Why in News

- Prime Minister of India is set to visit South Africa for the BRICS Summit to be held in Johannesburg

Important Points

- This year, the agenda of the 15th Summit is 'BRICS in Africa: Partnership for Mutually Accelerated Growth, Sustainable Development and Inclusive Multilateralism'.
- The chairmanship rotates among the group annually.
- The Chair has to set the agenda, priorities and calendar for the year.



15th BRICS summit 2023

- The Summit will be attended by the leaders of Brazil, India, China and South Africa.
- By mutual agreement, President Vladimir Putin of the Russian Federation will not attend the Summit but the Russian Federation will be represented by Foreign Minister, Mr Sergey Lavrov.
- In due course, a comprehensive statement on the substantive issues to be covered at the Summit and other related foreign policy matters will be issued.
- This is the first in-person summit since 2019 and the COVID-19 pandemic.
- This is also the first in-person meeting since the Russian invasion of Ukraine in 2022.
- This is also the first summit since Luiz Inácio Lula da Silva returned to power in Brazil, who represents a more socialist, anti-western politics than his predecessor President Bolsonaro.
- Given its composition, BRICS deliberations are perceived to carry a "counter-western" slant, and will be of importance as the U.S. and EU still hope to try and isolate Russia over the conflict.

About BRICS

- BRICS is an acronym that started as BRIC in 2001, coined by Jim O'Neill (a Goldman Sachs economist) for Brazil, China, India, and Russia.
- Later in 2010, South Africa was added to become BRICS.
- Goldman Sachs claimed that the global economy will be dominated by the four BRIC economies by 2050.
- The main reason for such a claim was that China, India, Brazil, Russia, and South Africa were ranked among the world's fastest-growing and emerging market economies for years.
- The main comparative advantage of this group is their low labour costs, favourable demographics, and abundant natural resources at the time of the global commodities boom.

Origin of BRICS

- Russia initiated the creation of BRICS.
- In 2006, they held the first BRICS Ministerial Meeting proposed by the then Russian President Vladimir Putin.
- At the initiative of Russia, on May 16, 2008, they hosted a meeting of BRICS Foreign Ministers at Yekaterinburg, Russia.
- They issued a Joint Communiqué on common stances on topical global development after the meeting.
- Russia hosted the first BRIC Summit on June 16, 2009, at Yekaterinburg.
- It pledged to promote cooperation and dialogue among the BRIC countries in a transparent, open, proactive, and incremental manner.

BRICS coordinated together in resolving

- Conflicts
- IMF reform
- The struggle against illicit drug trafficking
- The need, use, and development of technologies in information and communication
- To create favourable conditions for barrier-free trade.

Principles of BRICS

- Solidarity
- Openness
- Pragmatism
- Neutrality (regarding third parties)
- Non-bloc nature
- Role of the BRICS
- The BRICS countries agreed to undertake measures of mobilizing sufficient resources so that the IMF can strengthen its potential to combat all kinds of crisis.
- They also created the BRICS Interbank Cooperation Mechanism that provides Extending Credit Facility in Local Currency and the BRICS Exchanges Alliance.
- The BRICS nation offered a source of foreign expansion for firms and solid returns for institutional investors.
- They also focused on some regional issues, including the problems related to Libya, Syria, Afghanistan and Iran (their indigenous nuclear program).

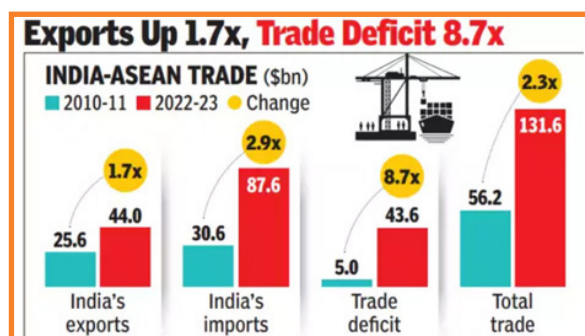
ASEAN-India Trade in Goods Agreement

Why in News

- A Joint Committee of the ASEAN-India Trade in Goods Agreement (AITIGA), signed in 2009, deliberated on the roadmap for the review of the pact and finalised the terms of reference for the fresh negotiations.

Important Points

- The ASEAN-India Trade in Goods Agreement is a trade deal between the ten member states of ASEAN and India.
- ASEAN and India signed the Agreement at the 7th ASEAN Economic Ministers-India Consultations in Bangkok, Thailand in 2009.
- The Agreement has led to steadily increasing trade between ASEAN and India since its signing.
- It established one of the world's largest free trade areas, covering a combined market of close to 1.8 billion people.
- Under the Agreement, ASEAN and India have committed to progressively eliminating duties on 76.4 percent of goods and to liberalize tariffs on over 90 percent of goods.



Origin

- The Agreement originated out of the Framework Agreement on Comprehensive Economic Cooperation between India and ASEAN created in 2003.
- This framework agreement set the basis for India and ASEAN to negotiate future trade agreements.

Components of the agreement :

- The Agreement covers trade in physical goods and products.
- It does not apply to trade in services.
- ASEAN and India signed a separate ASEAN-India Trade in Services Agreement in 2014.
- The Agreement allows the parties to maintain tariffs of four to five percent for some sensitive products.

Moreover, the Agreement includes unique tariff reduction provisions for India's "special products", which are:

- crude and refined palm oil,
- coffee,
- black tea, and
- pepper.
- Parties are permitted to place some tariff lines into "highly sensitive lists" to manage tariff reductions for

sensitive products, as well as an “exclusion list” for products excluded from the Agreement, which the parties must review annually.

Other provisions -

- In addition to reducing tariffs, the Agreement calls on all parties to establish predictable, consistent, and transparent trade practices to reduce non-tariff barriers. This includes:
 - simplifying customs procedures,
 - ensuring permissible non-tariff measures are transparent, and
 - preventing countries from instituting or maintaining non-tariff measures not in accordance with the WTO.
- The Agreement also establishes a Joint Committee formed from representatives of the parties.

Other provisions in the Agreement include :

- references to the ASEAN-India DSM Agreement for dispute resolution,
- exemptions for protecting security interests, and
- safeguard measures to protect against tariff cuts resulting in such significant import increases that foreign products overwhelm domestic ones.

BRICS gets six new members

Why in News

- The five-member BRICS invited six more countries to join the alliance.

Important Points

- BRICS consists of Brazil, Russia, India, China, and South Africa.
- In its ongoing summit at Johannesburg, South Africa, it has invited Iran, the United Arab Emirates, Saudi Arabia, Argentina, Egypt, and Ethiopia.

Significance

- BRICS currently represents around 40% of the world's population and more than a quarter of the world's GDP.
- With the additions, it will represent almost half the world's population, and will include three of the world's biggest oil producers, Saudi Arabia, the UAE and Iran.

Significance for India

- India is also part of the Shanghai Cooperation Organisation (SCO), and despite problems, it has relations with Russia, with China.
- While China does want BRICS to be an anti-western group, the Indian view is that it is a non-western group and should stay that way.
- Among the new members, while India looks at all of them as partnerships worth developing, concerns have been raised that the group could become more pro-China and sideline New Delhi's voice and interests.

About BRICS

- BRICS is an acronym that started as BRIC in 2001, coined by Jim O'Neill (a Goldman Sachs economist) for Brazil, China, India, and Russia.
- Later in 2010, South Africa was added to become BRICS.
- Goldman Sachs claimed that the global economy will be dominated by the four BRIC economies by 2050.
- The main reason for such a claim was that China, India, Brazil, Russia, and South Africa were ranked among the world's fastest-growing and emerging market economies for years.
- Russia initiated the creation of BRICS.
- In 2006, they held the first BRICS Ministerial Meeting proposed by the then Russian President Vladimir Putin.
- Russia hosted the first BRIC Summit on June 16, 2009, at Yekaterinburg.

The New Six BRICS



The Fujiwhara effect

Why in News

- In some of the recent storms in California, Fujiwhara effect was observed.

Important Points

- It was first identified by Sakuhei Fujiwhara, a Japanese meteorologist in 1921.
- The interaction between two cyclones is called the Fujiwhara effect.
- When two hurricanes (or cyclones, depending on where you live), spinning in the same direction, are brought close together, they begin 'an intense dance around their common center'.
- If one hurricane's intensity overpowers the other, then the smaller one will orbit it and eventually crash into its vortex to be absorbed.
- If two storms of similar strengths pass by each other, they may gravitate towards each other until they reach a common center and merge, or merely spin each other around for a while before shooting off on their own paths.
- In rare instances, the two cyclones with similar strengths may merge with one another, leading to the formation of a mega cyclone capable of wreaking havoc along coastlines.
- It was observed for the first time over the western Pacific ocean, when typhoons Marie and Kathy merged in 1964.



Linkage with climate change

- The rising frequency of this unusual effect is attributed to a rapidly warming world and the subsequent heating of ocean waters.
- In the 4 years between 2013 and 2017, there were 10 cases of the Fujiwhara Effect in the northwest Pacific Ocean.
- There has been a 35 per cent increase in the strength of typhoons that have hit Taiwan between 1977 and 2016.
- This happened due to a 0.4 to 0.7°C rise in the sea surface temperature during these 40 years in the northwest Pacific.

Keep an eye on
the goal, focus
on hard work.
If the floor is
achieved, it will
be Your noise
all around.



Chapter 8

Government Scheme

Decarbonising Transport 2023

Why in News

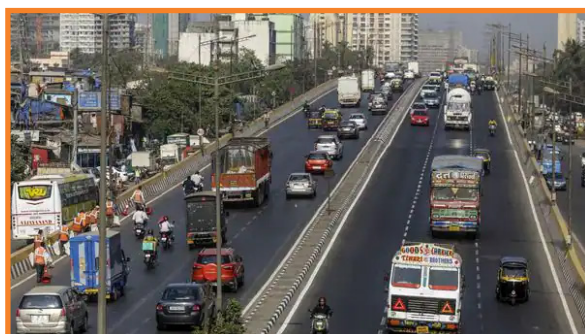
- NITI Aayog recently released the “Towards Decarbonising Transport 2023 : A Stocktake on Sectoral Ambition in G20” report.

Important Points

- NITI Aayog released the “Towards Decarbonising Transport 2023 report to support global discussions on sustainable transport during India’s G20 presidency.

What is Decarbonising Transport ?

- Decarbonising Transport refers to the process of reducing or eliminating carbon dioxide (CO₂) and other greenhouse gas emissions from the transportation sector.
- According to the World Economic Forum, transport accounts for 21% of global carbon emissions and could grow to a third by 2050 if nothing is done.
- As of 2021, the transport sector in India contributes to around 14-15% of the country’s total greenhouse gas emissions. Within the transport sector, road transport contributes to more than 90% of the total CO₂ emissions.
- Since 2018, nations around the world have significantly ramped up their commitments to reducing greenhouse gas emissions.
- At the COP26 in 2021, over 100 national governments, states, cities, and major corporations signed the Glasgow Declaration, which pledges to accelerate the transition to 100% zero-emission cars and vans.
- The number of countries with net-zero pledges and transport-related NDC targets is rising.



Key Highlights of the Report

- India has still no overall emissions or energy targets for the transport sector
- India’s transport-sector emissions could increase 65% by 2030 and 197% by 2050 (from 2020 levels)
- Contributors: Road > Rail transport

Recommendations of Report

- Increasing the reliance on zero-carbon electricity for powering transport, such as installing more charging stations for electric vehicles and promoting the use of renewable energy in public transportation systems.
- Developing and investing in the production of power-to-X fuels, which are carbon-neutral alternatives for energy-dense fuels used in long-haul aviation and maritime shipping.
- Eliminating fossil-fuel subsidies that favour carbon-intensive transport modes, and redirecting resources towards sustainable alternatives, such as ending subsidies on gasoline prices and reallocating the funds to improve public transportation infrastructure and support EV adoption.
- Adopting the “avoid, shift, improve” strategy, which focuses on avoiding unnecessary trips, shifting to more sustainable modes of transport, and improving the energy efficiency of vehicles and transportation systems. For example, many companies are adopting remote work options for their employees.

India's Initiative

- Adopting Bharat Stage VI Emission Standards
- The FAME II scheme, which provides subsidies and incentives for the adoption of electric vehicles (EVs) and the development of charging infrastructure.

- The Production Linked Incentive (PLI) scheme for Advanced Cell Chemistry (ACC) battery storage, which aims to boost the domestic manufacturing of high-performance batteries for EVs and other applications.
- The Indian Railways' pledge to become a net-zero emitter by 2030, by electrifying its entire network, increasing the share of renewable energy, and improving energy efficiency.
- The encouragement of non-motorised transport, such as cycling and walking, by creating dedicated lanes, infrastructure, and policies.

Amrit Railway Stations

Why in News

- PM lays foundation stone for redevelopment of 508 Railway Stations across the country.

Important Points

- These 508 stations are spread across 16 states and Union Territories, including 55 each in Uttar Pradesh and Rajasthan, 49 in Bihar, 44 in Maharashtra, 37 in West Bengal, 34 in Madhya Pradesh, 32 in Assam, 25 in Odisha, 22 in Punjab, 21 each in Gujarat and Telangana, 20 in Jharkhand, 18 each in Andhra Pradesh and Tamil Nadu, 15 in Haryana and 13 in Karnataka.



About ABSS

- ABSS envisages development of stations on a continuous basis with a long-term vision.
- It was launched to redevelop railway stations nationwide to provide state-of-the-art public transport and world-class amenities at railway stations.
- It is based on Master Planning for long term and implementation of Master Plan will be as per station needs.
- Stations will be developed as 'City Centres' in an integrated approach for overall city development, centred around station.
- Design of station buildings will be inspired by local culture, heritage and architecture.

Initiatives taken by Indian railways for modernisation

- Train Modernisation by introducing indigenously developed Vande Bharat Trains, Vistadome coaches, SMART coaches with ultra-modern facilities, Increasing Speed of Freight Trains etc.
- Signalling and Safety features include Real Time Information System (RTIS) for tracking, Linke Hofmann Busch (LHB) coaches,
- KAVACH- Indigenously developed Train Collision Avoidance System, Electronic Interlocking system etc.
- Combating Climate Change through initiatives such as setting up Dedicated Freight Corridors (DFCs), becoming a Net Zero entity by 2030 by completing electrification of all railway tracks etc.
- Others: Elimination of all unmanned level crossings on broad gauge, Wi-Fi services at stations, One Station One Product scheme etc.

Investor Education and Protection Fund Authority (IEPFA)

Why in News

- Recently, in a step towards financial literacy, Investor Education and Protection Fund Authority (IEPFA) launched two Investor Awareness Vans titled "Niveshak Sarathi as part of the Azadi ka Amrit Mahotsav celebrations.

Important Points

- This strategic initiative aims to disseminate crucial financial education and raise awareness against fraudulent schemes across the Delhi NCR region.
- These specially equipped vans are equipped with a TV screen running "Hisab Ki Kitab," a series of investor awareness movies meticulously developed by IEPFA.



- Moreover, they are equipped with a public address system to ensure effective communication.
- Complementing these tools, a thoughtfully designed brochure compiles all the essential elements of financial awareness.
- The initiative spanned five key locations, with each location across Delhi-NCR, hosting dedicated sessions conducted by the VLEs (Village Level Entrepreneurs) of IEPFA.
- These informative sessions collectively reached approximately 500 people, further emphasising the commitment to widespread financial literacy.
- The endeavour was fortified by the partnership of Common Service Centre as the knowledge partner.
- The journey of “Niveshak Sarathi” culminated at the CSC office on Lodhi Road, marking the end of a successful and impactful campaign to bolster financial awareness and education with an aim to conduct more sessions ahead.



About IEPFA

- The Investor Education and Protection Fund Authority (IEPFA) was set up on September 7, 2016, under the aegis of the Ministry of Corporate Affairs, Government of India, for administering the Investor Education and Protection Fund for making refunds of shares, unclaimed dividends, and matured deposits/ debentures, among other things, to investors.
- The following amounts that remained unpaid and unclaimed for a period of seven years from the date they became due for payment are credited to the Fund:
 - Amounts in the unpaid dividend accounts of the companies
 - The application money received by companies for allotment of any securities and due for refund
 - Matured deposits with companies
 - Matured debentures with companies
 - Grants and donations are given to the fund by the Central Government, State Governments, companies or any other institutions for the purposes of the Fund
 - The interest or other income received out of the investments made from the fund

About CSC

- Based on the assessment of the erstwhile Common Services Centre (CSC) Scheme, the Government of India has initiated CSC 2.0 Project in August 2015, under the Digital India.
- The objective of the CSC 2.0 project is to set up at least one CSC in 2.50 lakh Gram Panchayats (GP) across the Country to deliver various citizen centric services.
- The project is being implemented by CSC- Governance Services India Limited (CSC Special Purpose Vehicle, CSCSP).
- It is a self-sustainable entrepreneurship model which is run by Village Level Entrepreneurs (VLES).

PUSHp portal

Why in News

- Recently, the National Power Committee (NPC) has asked States to provide suggestions for offering incentives to buyers and sellers on the surplus power portal PUSHp.

Important Points

- The National Power Committee (NPC) has urged States to contribute their insights towards shaping incentives for both buyers and sellers on the Power High Price Day Ahead Market (HP-DAM) and Surplus Power Portal (PUSHp).
- This innovative platform, introduced by the Ministry of Power, aims to enhance power availability, optimize utilization, and facilitate efficient power trading.



- **Concept Launch:** The Ministry of Power unveiled the HP-DAM and PUSHp to address power scarcity during peak demand periods and to encourage surplus power trading.
- **Price Flexibility:** The platform allows certain sellers to offer power at prices exceeding the ceiling of Rs 12 per unit during peak demand, promoting higher availability.
- **Surplus Power Indication:** Power distribution companies (DISCOMs) can display their surplus power availability on the portal, indicating the block times, days, or months.
- **Requisition Mechanism:** DISCOMs in need of power can requisition the surplus power from the portal, promoting efficient allocation.

Operational Mechanism

- **Cost Determination:** New buyers will pay both variable charges (VC) and fixed costs (FC) as regulated by authorities.
- **Reassignment Implications:** Once power is reassigned, the original beneficiary relinquishes the right to recall power, including the entire FC liability.
- **Reducing Fixed Costs:** This approach alleviates the fixed cost burden on DISCOMs, making power distribution more efficient.
- **Optimal Capacity Utilization:** The platform ensures that all available generation capacity is effectively utilized, mitigating wastage.

Day Ahead Market

- It is a physical electricity trading market where power is delivered within 24 hours of the next day starting from midnight.
- They are traded in 15 minute time blocks and the prices and quantum of electricity closed the auction bidding process.

Pradhan Mantri Uchchatar Shiksha Abhiyan

Why in News

- 14 States and Union Territories which are yet to sign a crucial Memorandum of Understanding (MoU) with the Union Education Ministry, which mandates the implementation of the Pradhan Mantri Uchchatar Shiksha Abhiyan (PM-USHA).

Important Points

- Kerala, Tamil Nadu and West Bengal are among 14 States and Union Territories which are yet to sign a crucial Memorandum of Understanding (MoU) with the Union Education Ministry, which mandates the implementation of the National Education Policy in order to avail funds worth almost Rs 13,000 crore for the next three years, under the Centre's flagship scheme for State-run higher education.



'Better implementation'

- PM-USHA is the new name for the Ministry's scheme to improve the quality of higher education in State Universities — through curricular and programme changes, teacher training, physical and digital infrastructure, accreditation, and enhancing employability — while ensuring equity, access, and inclusion.
- It provides an outlay of Rs 12,926.10 crore between 2023-24 and 2025-26.
- The MoU is being signed to show the willingness of States and UTs to participate in the PM-USHA scheme and it will help in the better implementation of the scheme.

NEP reforms need more funds

- The MoU — which makes it mandatory for States to undertake the administrative, academic, accreditation, and governance reforms detailed in the NEP, including an academic credit bank, entry and exit flexibility, and the Samarth e-governance platform — has irked some State governments.
- 40% of the expenses under PM USHA is borne by the States.
- To implement the NEP, States need more funds and aid from the Centre.

PM-USHA would be focusing on the following

- **Equity, Access, and Inclusion:** The scheme focuses on equity initiatives and gender inclusion by providing adequate opportunities to underprivileged groups, and it promotes the inclusion of women, minorities, SCs/STs/OBCs, and specially-abled people in higher education, which will help to increase the GER
- **Developing Quality Teaching & Learning processes:** It would provide the facilities to the institution for upgrading the physical and digital infrastructure and also for the conversion of single-stream higher education institutions (HEIs) into multiple streams institutions
- **Accreditation of Non-Accredited Institutions & Improving Accreditation:** Accreditation pushes institutions to meet and maintain higher standards in education, in turn, increases trust and confidence in them among the public and boosts accountability
- **ICT-based Digital Infrastructure:** To ensure greater access to education, there is the significant importance of technology in bridging the language barrier between teachers and students, creating digital libraries, popularizing language learning as well as introducing the Open distance learning (ODL) programs.
- **Enhancing Employability through Multidisciplinary :** Collaboration between industry and academia is key to catalysing innovation and growth in career building. PM-USHA will encourage the HEIs to get linked with the Industry and the Market to strengthen skills, innovations, and employability

Prime Ministers' Museum and Library (PMML) Society

Why in News

- The Nehru Memorial Museum and Library (NMML) has officially been renamed the Prime Ministers' Museum and Library Society recently.

Important Points

- It is an autonomous institution under the Ministry of Culture, Government of India.
- It is housed in the historic Teen Murti campus located south of Rashtrapati Bhavan in New Delhi.
- PMML is dedicated to the objective of promoting advanced research on Modern and Contemporary India.



Background

- Designed by Robert Tor Russel and built in 1929-30 as part of Edwin Lutyens' imperial capital, Teen Murti House was the official residence of the Commander-in-Chief in India.
- In August 1948, after the departure of the last British Commander-in-Chief, Teen Murti House became
- the official residence of independent India's first Prime Minister, Jawaharlal Nehru, who lived here for sixteen years until his death on May 27, 1964.
- On Jawaharlal Nehru's 75th birth anniversary on November 14, 1964 Dr. Sarvapalli Radhakrishnan, President of India, formally dedicated the Teen Murti House to the nation and inaugurated the Nehru Memorial Museum.
- On 1 April 1966, the Government set up the Prime Ministers Museum and Library (PMML) Society to manage the institution.

PMML has four major constituents, namely-

- Memorial Museum;
- Library on modern India;
- Centre for Contemporary Studies;
- Nehru Planetarium;
- **Administration:** The General Council and the President and the Vice-President of the PMML Society are nominated by the Central Government.

Floodwatch App

Why in News

- Recently, the Chairman of Central Water Commission (CWC) launched the mobile application, "FloodWatch.

Important Points

- The main purpose of this app is to provide real-time flood information and forecasts for up to 7 days to the general public.
- The app, developed in-house, is designed to be user-friendly and offers both readable and audio broadcast capabilities.
- It presents information in both English and Hindi languages.
- One of the key features of the app is its ability to offer real-time flood monitoring. Users can stay updated about the current flood situations across the entire country.
- The app utilizes data about river flow that is updated almost in real-time from various sources.
- This data is then used to provide flood forecasts for the nearest location to the users.
- By visiting the Home Page, users can easily access flood advisories for the station closest to them.
- Another noteworthy feature is the Interactive Map, which allows users to check either the CWC Flood Forecast (for the next 24 hours) or the Flood Advisory (up to 7 days) by directly selecting a station on the map.
- Alternatively, users can search for the name of a specific station using the search box.
- Once a station is chosen from the dropdown menu, the map zooms in on its location.
- The FloodWatch app employs advanced technologies like satellite data analysis, mathematical modeling, and real-time monitoring to deliver accurate and timely flood forecasts.
- With this app, users can easily access crucial information about flood situations across the country.
- The user-friendly interface ensures that anyone can stay informed and reduce risks during flood incidents.



Key facts about Central Water Commission

- It is a premier Technical Organization of India in the field of Water Resources.
- It is presently functioning as an attached office of the Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation.
- It is headed by a Chairman, with the status of Ex-Officio Secretary to the Government of India.

Functions

- The Commission is entrusted with the general responsibilities of initiating, coordinating and furthering in consultation of the State Governments concerned, schemes for control, conservation and utilization of water resources throughout the country.
- It also undertakes the investigations, construction and execution of any such schemes as required.

Sanchar Saathi portal

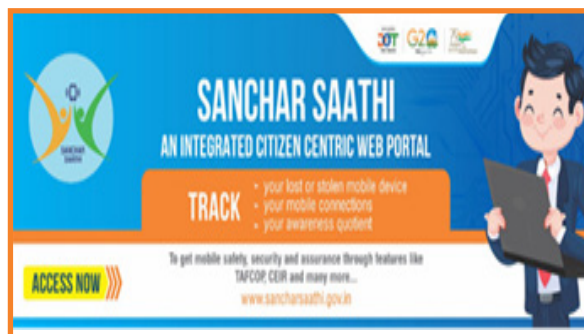
Why in News

- In order to reduce cyber frauds performed through fraudulently acquired SIM cards, the Department of Telecommunications (DoT) will now require police verification for SIM dealers, the enforcement move follows the launch of the Sanchar Saathi portal.

Important Points

- Recent efforts to curb fraudulent mobile connections have led to the blacklisting of 67,000 SIM dealers, 52 lakh connections, and the registration of over 300 First Information Reports (FIR).
- Sanchar Saathi portal is a citizen centric initiative of Department of Telecommunications to empower mobile subscribers, strengthen their security and increase awareness about citizen centric initiatives of the Government.

- It empowers citizens by allowing them to know the mobile connections issued in their name, get disconnected the connections not required by them, block/trace lost mobile phones and check genuineness of devices while buying a new/old mobile phone. Sanchar Saathi contains various modules like CEIR, TAF COP etc.
- The portal aims to provide various reforms and services related to mobile connections and telecommunications.
- It has been developed by C-DoT under the Department of Tele-communications (DoT) to prevent frauds such as identity theft, forged KYC, banking frauds etc.



The portal allows mobile phone users to :

- Check the connections registered on their names.
- Report fraudulent or unrequired connections.
- Block the mobile phones which are stolen/lost
- Check IMEI genuineness before buying a mobile phone.

The three reforms are being introduced as part of the portal's framework :

- CEIR (Central Equipment Identity Register): It enables the tracking and blocking of lost or stolen phones anywhere in the country.
- Know your mobile connections: It allows users to check the number of mobile connections issued in their name by logging in using their mobile number. This feature helps identify any unauthorized or unwanted connections, which can be blocked immediately.
- ASTR (Artificial Intelligence and Facial Recognition powered Solution for Telecom SIM Subscriber Verification): This AI-based technology facilitates mobile connection analysis and includes features such as IMEI-based phone theft information messaging to law enforcement agencies and the owner. It also enables blocking of any number associated with a particular IMEI and the tracking of stolen mobile devices.
- The portal and its reforms aim to enhance transparency, security, and accountability in the telecom sector.

Pradhan Mantri Jan Dhan Yojana (PMJDY)

Why in News

- The finance ministry recently said the total number of Jan Dhan accounts in the country has crossed the 50 crore mark, with 56 per cent of the accounts belonging to women.

Important Points

- PMJDY is a National Mission for Financial Inclusion launched in August 2014 to ensure access to financial services, namely, Banking/ Savings & Deposit Accounts, Remittance, Credit, Insurance and Pension, in an affordable manner.
- It envisages universal access to banking facilities with at least one basic banking account for every household, financial literacy, access to credit, insurance and pension.
- The plan also envisages channelling all Government benefits (from Centre / State / Local Body) to the beneficiary's accounts and pushing the Direct Benefits Transfer (DBT) scheme of the Union Government.

Eligibility

- The applicant should be an Indian National.
- Any individual above 10 years can open a bank account.
- If minors above ten years apply, they will require support from their legal guardians to administer their PMJDY account.

Jan Dhan Account

- An individual can consider opening an account under this scheme with any bank branch or Business Correspondent (Bank Mitra) outlet.
- Further, accounts opened under PMJDY can be opened with zero balance.



- However, if the account holder wishes to get a chequebook, he/she will have to fulfil the minimum balance criteria.
- The account holders under this scheme will be given a RuPay debit card which can be used across all ATMs for cash withdrawal.

Benefits

Accidental Insurance Cover :

- It provides accidental insurance of Rs 1,00,000 to the holders of non-premium cards, while those with premium cards can avail up to Rs 2,00,000.
- People holding a RuPay Debit Card under PMJDY will be eligible for this insurance.

Life Cover Insurance :

- The holders of a RuPay Debit Card under the scheme can also receive life cover insurance up to Rs 30,000.
- It will only apply to people opening bank accounts for the first time under Jan Dhan Yojana with a debit card.
- The person should also be the head of the family or a major earning member.
- This scheme will be liable to a single payment of Rs 30,000 upon the death of a beneficiary.
- State or Central Government employees, public sector employees, and people with taxable income will not be eligible for life cover insurance under Jan Dhan Yojana.
- Overdraft Facility : Beneficiaries can avail of an overdraft facility for up to Rs10,000. However, this is only available against one account per household.
- This scheme also provides loans of up to Rs5,000 to beneficiaries after completing six months of account transactions.

PEHCHAN scheme

Why in News

- PEHCHAN scheme to provide new identity to handicraft artisans and help them avail benefits of various schemes

Important Points

- PEHCHAN scheme was launched in 2016 to provide new identity to handicraft artisans so that the benefits of various schemes are provided to the deserving artisans.
- Aadhar linked Pehchan Cards are issued after due verification.
- Pehchan card holders can avail the benefits of all the handicrafts schemes implemented by Ministry of Textiles.
- The ID card will enable the artisans to avail easy loans at a nominal rate.
- The ID cardholders will get the benefit of life insurance and Rs.1200 per year for their children studying between Class IX and Class XII.



Key features

- Baseline survey & Mobilization of Artisans Hastshilp Vikash Yojana: The Scheme aims to promote Indian handicraft by developing artisans clusters into professionally managed and self-reliant community enterprises on the principles of effective member participation and mutual corporation.
- Design & Technology Up-gradation: The scheme aims to upgrade artisans skills through the development of invoice design and prototypes products for overseas markets, a revival of endangered crafts and preservation of heritage etc.
- Human Resource Development: The scheme has been formulated to provide a qualified and trained workforce to the handicraft sector.
- Direct Benefit to Artisans: The scheme envisages welfare measures like Health and Life Insurance, recognition, extending credit facilities, supply of modern tools and equipment to the artisans etc.
- Infrastructure and Technology Support: The scheme aims to develop world-class infrastructure in the country to support handicraft production and enhance the product quality and cost to enable it to compete in the global market.
- Research and Development: The scheme was introduced to conduct surveys and studies of important crafts and make an in-depth analysis of specific aspects and problems of Handicraft to generate useful inputs to aid policy planning and fine-tune the ongoing initiatives.
- Marketing Support & Services: The scheme was introduced to promote and provide financial assistance to artisans.

Chapter
9

Miscellaneous

North East Venture Fund

Why in News

- Recently, the Union Minister for Ministry of Development of North Eastern Region informed Lok Sabha about the North East Venture Fund.

Important Points

- It is registered as a Category I Venture Capital Fund under Securities and Exchange Board of India (SEBI) Alternative Investment Funds (AIF) Regulations, 2012.
- An independent committee (Investment Committee) comprising of experienced professionals from the field of venture funding, private equity, developmental banking etc takes the investment decision.
- As a regulatory requirement, periodic reporting on the operation/compliances of regulation is placed before the contributors of NEVF and other concerned bodies in a structured manner.
- In addition, fund operation is also monitored by Reserve Bank of India (RBI) and Comptroller and Auditor General of India (CAG) in the form of periodic audit.
- It was established as a close ended fund with a target corpus of Rs. 100 crore.
- It has already received its targeted corpus with contribution of Rs. 30 crore from North Eastern Development Finance Corporation Ltd. (NEDFi), Rs. 25 crore from Small Industries Development Bank of India (SIDBI) and Rs. 45 crore from Ministry of Development of North Eastern Region (MDoNER).
- However, the contribution of MDoNER was given to NEDFi as interest free loan to be repayable in lump sum at the end of 15 years.
- The startups, supported by NEVF, have identified the unique business opportunities available in the region and have provided value added solutions to the consumers through their products and services.
- To augment entrepreneurship opportunities among marginalized sections, NEDFi has established its branch network across all the states of NER which reach out to their startups through their business meets wherein the details of venture funds are explained.
- This has resulted in NEVF reaching and funding startups from Arunachal Pradesh, Manipur and Meghalaya.
- A pipeline of proposals is at various stages of processing from the states of Nagaland and Mizoram also. Many of these startups are led by women co-founders.
- To further its attempt to reach to the remote areas of NER to support startups, NEVF had conducted Startup Investment Fest, an online application process for investment, in March, 2022.



Chikri Wood Craft And Mushkbudji Rice

Why in News

- Recently, Rajouri's chikri wood craft, Anantnag's Mushkbudji rice receive GI tag.

Important Points

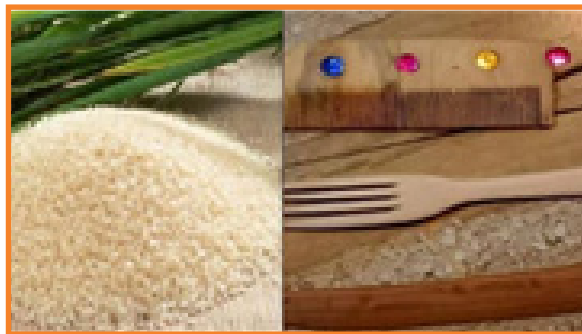
- In a significant recognition of local craftsmanship and agricultural heritage, the Geographical Indication (GI) Tags have been bestowed upon Rajouri Chikri Wood Craft from Rajouri district and the prized Mushkbudji Rice variety from Anantnag district.
- These labels signify the unique nature and exceptional qualities of these products, tracing their origins to specific regions.



- This achievement is a result of a collaborative effort involving NABARD, the Department of Handicrafts & Handloom, and the Department of Agriculture, commencing in December 2020.

Mushkbudji Rice

- It is short bold aromatic rice grown in higher reaches of Kashmir valley.
- The cooked rice is unique and possesses a harmonious blend of taste, aroma and rich organoleptic properties.
- It is mainly is grown in areas of Sagam, Panzgam and Soaf Shali of district Anantnag and Beerwah belt of district Budgam.
- The consumption of aromatic rice in Kashmir has now been limited to special occasions, marriages, and festivals.



Rajouri's chikri wood craft

- Nestled within the hill ranges of Jammu province's Rajouri district, the exquisite Chikri Wood Craft stands as a testament to intricate artistry.
- Admired for its pale, honey-colored softwood, Chikri is brought to life through meticulous carving and fine detailing.
- The GI tag endorses the unique essence of this craft, reflecting the region's rich heritage and masterful skills.

Geographical Indication Tag

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

Cott-Ally

Why in News

- Cott-Ally mobile app has been developed for farmers to increase awareness about MSP rates, nearest procurement centers, payment tracking, best farm practices etc.

Important Points

- The Union Minister of State for Ministry of Textiles informed Lok Sabha about Cott-Ally App.
- The Cotton Corporation of India Limited I has developed a mobile app – "Cott-Ally" exclusively for the cotton farmers.

Objective

- To maximise the use of the digital media among the farmers to increase the reach of all government schemes especially in the cotton farming sector.
- To have direct interaction and outreach with the cotton farmers in their regional languages.



Features of "Cott-Ally" are as follows

- Easy to operate in regional languages.
- MSP cotton rates state-wise, variety-wise and quality-wise can be seen.
- Farmers can track real time payment status of their kapas sold to CCI under MSP.
- Contact details of procurement centers opened by the CCI.

- Direct interaction with CCI through Live chat to resolve doubts & grievances, if any.
- General information on quality management of cotton crop and other related information.
- Can be downloaded from google play store for android mobile/app store for Apple mobile.
- Cott-Ally mobile app has been developed for farmers to increase awareness about MSP rates, nearest procurement centers, payment tracking, best farm practices etc.
- Government ensures availability of Cotton to Textile Industry through a mechanism namely Committee on Cotton Promotion and Consumption (COCPC).
- COCPC keeps constant watch and reviews cotton scenario in the country and aptly advises the Government generally on matters pertaining to production and consumption of cotton.

CarbonLite Metro Travel

Why in News

- The Delhi Metro Rail Corporation (DMRC) recently unveiled a pioneering initiative called CarbonLite Metro Travel to educate passengers about their significant contribution towards reducing carbon emissions by choosing metro trains.

Important Points

- It is a new initiative of the DMRC to help people understand their contribution to reducing CO₂ emissions by opting for metro rail services.
- With this initiative, daily commuters will now be able to understand and learn about the average amount of Carbon Dioxide (CO₂) emissions they are decreasing with their simple step of selecting the metro as their means of transportation.
- The amount of CO₂ will be calculated based on a comparison to road-based motor vehicles.
- It also aims to persuade commuters to choose an environmentally friendly method of transportation over motorised alternatives, thereby supporting a cleaner and more ecologically balanced environment.
- The initiative is in line with the Government of India's Mission Lifestyle for Environment (LiFE).



Who can avail of this feature ?

- People travelling with QR code-based tickets will be able to avail of this facility.
- Information about the decrease in CO₂ emissions caused by metro travel will be prominently displayed on both mobile QR code tickets and physical tickets.
- Supported by comprehensive research conducted by The Energy and Resources Institute (TERI), Delhi, the initiative underscores that each kilometre travelled by metro train instead of road vehicles results in a noteworthy reduction of 32.38 gram of CO₂ emissions.
- The CO₂ savings will be displayed and accumulated in the user's DMRC mobile app for all journeys undertaken by the passenger, further enhancing his/her feel-good factor.

Mission LiFE (Lifestyle for Environment)

- It is an India-led global mass movement to nudge individual and community action to protect and preserve the environment.
- It was launched by the Indian Prime Minister at the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow in November 2021.
- The program hopes to "mobilize one billion Indians as well as people in other countries to become individuals who practice sustainable lifestyles.
- The global movement will showcase sustainable goals and climate actions taken by countries and individuals around the world.
- It makes the fight against climate change democratic, in which everyone can contribute with their respective capacities.
- It emboldens the spirit of the P3 model, i.e., Pro Planet People.

- It functions on the basic principles of ‘Lifestyle of the planet, for the planet and by the planet’.
- It aims at following a three-pronged strategy for changing people's collective approach towards sustainability, nudging individuals to practice simple yet effective environment-friendly actions in their daily lives (demand) enabling industries and markets to respond swiftly to the changing demand (supply) to influence government and industrial policy to support both sustainable consumption and production (policy).

Pibot

Why in News

- A team of engineers and researchers from the Korea Advanced Institute of Science & Technology (KAIST) is currently developing a humanoid robot named ‘Pibot’ that can fly aircraft without needing to modify the cockpit.

Important Points

- It is the world's first humanoid pilot.
- It can fly an aeroplane just like a human pilot by manipulating all the single controls in the cockpit, which is designed for humans.
- The research team says Pibot “understands” and memorises manuals originally written for humans thanks to recent advances in large language models (LLM).



Features

- It combines artificial intelligence and robotics technologies, can process the natural language of the flight manual and control the flight's operation in real-time.
- Pibot can control its arms and fingers to dextrously operate flight instruments, even with severe vibration in an aircraft, using high-precision control technology.
- Its external cameras allow Pibot to monitor the current state of the aircraft and the internal ones help it manage essential switches on the control panel.
- It is capable of memorizing global flight charts to conduct mistake-free flight missions on any air route.
- It can memorise aircraft operation and emergency manuals (QRH, an in-cockpit manual for the flight crew to refer to in case of in-flight problems) and respond immediately.
- The humanoid robot can also communicate with air traffic controllers and humans in the cockpit using voice synthesis, allowing it to act as a pilot or a first officer.
- Pibot is expected to operate error-free flight, being able to react far quicker than its human counterparts in emergency situations.
- While using ChatGPT, the research team is also currently developing and testing its own natural language model so that Pibot can make queries without relying on an Internet connection.
- The tailored language model will handle information exclusively about piloting and will be stored in a small computer that can be carried onboard.

Flying alone or as a copilot

- Pibot can also be plugged into aircraft to directly communicate with them. It's currently designed to be deployed in extreme situations where human involvement may not be beneficial.
- The humanoid robot can also communicate with air traffic controllers and humans in the cockpit using voice synthesis, allowing it to act as a pilot or a first officer.
- Its adaptability goes beyond the aviation sphere.
- Standing at 160 cm and weighing 65 kg, Pibot's humanoid design allows it to seamlessly replace humans in roles like driving automobiles, operating tanks, or even commanding ships at sea.
- The robot is still in development and is expected to be completed by 2026.
- The research project was commissioned by the Agency for Defense Development (ADD), the government body charged with research into defence technology in South Korea.

Matti banana

Why in News

- The Matti banana variety, native to Kanniyakumari district was recently granted the Geographical Indication (GI) tag.

Important Points

- There are six known types of the Matti banana and they are indigenous to Kanniyakumari, where it thrives in the unique climate and soil.
- They are known as 'Baby Banana' which flourishes mainly in Kalkulam and Vilavancode taluks.
- Even if it takes root and yields in other areas, the fruit will be without the sweet fragrance and honey-like taste unique to the Matti bananas grown in Kanniyakumari.
- Unlike typical banana bunches that grow straight, the Matti's fingers exhibit a distinct wind-blown appearance.
- Its low total soluble solids content (TSSC) recommends it as a baby food.



Types of Matti Banana

- Nal Matti boasts a yellowish-orange colour and fine aroma, while Theyn [honey] Matti's pulp tastes like honey.
- Kal Matti gets its name from the calcium oxalate crystals forming in its pulp and black dots on the skin.
- Nei Matti exudes the aroma of ghee, and Sundari Matti, a Matti clone, with its elongated fingers, thick peel, and creamy white rind, is facing extinction.

What is a Geographical Indication Tag ?

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

Amyotrophic Lateral Sclerosis (ALS)

Why in News

- Support groups for patients with Amyotrophic Lateral Sclerosis urge that the condition be counted as a rare disease.

Important Points

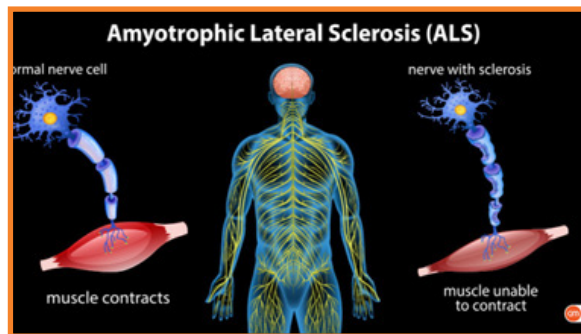
- ALS support groups urge that it be counted as a rare disease to ease eligibility for aid; India's National Policy for Rare Diseases 2021 states that 'aid up to Rs 50 lakh will be provided to those suffering from any category of rare diseases' and getting treatment in any Centre of Excellence.

Amyotrophic Lateral Sclerosis (or ALS)

- ALS is a neurodegenerative disease in which special nerve cells called motor neurons in the brain and spine - which control an individual's voluntary functions like walking, chewing, talking, moving their arms- are affected.
- It's also known as Lou Gehrig's disease.
- As these nerve cells progressively die, the muscles dependent on them are unable to function or move, due to which they begin to atrophy or waste away.
- ALS is a progressive disease. Once it involves the motor neurons that regulate respiratory muscles, breathing gets affected.



- Currently, there is no effective cure for ALS and the best therapies are drugs and other interventions that could lengthen the life of the person with ALS (or PALS).
- While the disease progresses differently in each individual, the average survival time is three years, according to The ALS Association, a non-profit organisation, or between 20 to 48 months on an average.



How does ALS affect the body ?

- As your motor neurons (nerve cells) continue to decline, they can't send signals to your muscles. The two types of motor neurons are:
- Upper motor neurons, the motor nerve cells in your brain and spinal cord. Their job is to send signals to lower motor neurons.
- Lower motor neurons, the motor nerve cells in your brain stem (lower part of your brain) and spinal cord. They receive instructions from the upper motor neurons. They then send messages to your muscles telling them to move.

Difficulty with the diagnosis

- From the onset of symptoms, it takes around 8 to 15 months for diagnosis. That is because there are also no definite biomarkers yet.
- This amount of time between the onset of symptoms and confirmed diagnosis is agonising for the caregivers and PALS.
- For ALS, motor cell failure needs to be detected in at least 2 regions of the body; either one of the upper limbs or any of the lower limbs, and one more region like the bulbar region which controls the muscles needed for swallowing, speaking, chewing, and other functions.
- Suppose one comes in with just one symptom like one hand not working like before or a leg that drags, then that is not enough for it to be diagnosed as ALS.

National Supercomputing Mission

Why in News

- The Union Cabinet recently approved an outlay of Rs 14,903 crore for the extension of the Digital India programme, which also proposes nine more supercomputers to be added under the National Super Computer Mission.

Important Points

- It was launched in 2015 to provide the country with supercomputing infrastructure to meet the increasing computational demands of academia, researchers, MSMEs, and startups.
- The Mission is steered jointly by the Department of Science and Technology (DST) and Ministry of Electronics and IT (MeitY) and implemented by the Centre for Development of Advanced Computing (C-DAC), Pune and the Indian Institute of Science (IISc), Bengaluru.



Objectives

- Make India a world leader in High-Performance Computing (HPC) and enhance the national capability in solving grand challenge problems of national and global relevance.
- Empower scientists & researchers with state-of-the-art computing facilities for their cutting-edge research in their respective Domains.
- Reduce redundancies and avoid duplication of efforts and investments.
- Create an ecosystem for positioning India as a major power for supercomputing and attain global competitiveness and self-reliance in HPC.

- The Mission envisages empowering academic and R&D institutions spread over the country by installing a vast supercomputing grid comprising of more than 70 HPC facilities.
- These supercomputers will also be networked on the National Supercomputing grid over the National Knowledge Network (NKN). The NKN is another programme of the government which connects academic institutions and R&D labs over a high speed network.
- Academic and R&D institutions, as well as key user departments/ministries, would participate by using these facilities and developing applications of national relevance.
- The Mission also includes the development of highly professional and skilled human resources for meeting the challenges of development of these applications.

Indian supercomputers in the Top 500 Global Supercomputing List :

- The AI Supercomputer 'AIRAWAT', installed at C-DAC, Pune, has been ranked at 75.
- PARAM Siddhi-AI supercomputer installed at C-DAC, Pune, has been ranked at 131.
- Pratyush supercomputer installed at the Indian Institute of Tropical Meteorology has been ranked at 169.
- Mihir supercomputer installed at the National Centre for Medium Range Weather Forecasting has been ranked at No. 316.

Solar Energy Corporation of India Limited (SECI)

Why in News

- The Solar Energy Corporation of India (SECI) recently invited bids for developing more than 4 gigawatts (GW) of renewable energy, including wind power.

Important Points

- SECI is a Central Public Sector Undertaking (CPSU) under the administrative control of the Ministry of New and Renewable Energy (MNRE).
- It was set up on 20th September 2011 to facilitate the implementation of the National Solar Mission (NSM) and the achievement of targets set therein.
- It is the only CPSU dedicated to the renewable energy sector.
- Vision: To build 'Green India' through harnessing abundant solar radiation and to achieve energy security for the country.



Mission

- To become the leader in the development of large-scale solar installations, solar plants and solar parks and to promote and commercialize the use of solar energy to reach the remotest corner of India.
- To become a leader in exploring new technologies and their deployment to harness solar energy.
- It was originally incorporated as a section-25 (not-for-profit) company under the Companies Act, 1956.
- However, through an amendment by the Government of India, the company was converted into a Section-3 company, in 2015, under the Companies Act, 2013.
- The mandate of the company has also been broadened to cover the entire renewable energy domain.
- The company is one of the nodal agencies for the implementation of a number of schemes of MNRE. In addition, SECI has ventured into solar project development on a turnkey basis for several PSUs/Government departments.
- The company also has a power trading license and is active in this domain through trading of solar power from projects set up under the schemes being implemented by it.

Melanin

Why in News

- An Indian-origin researcher, along with his team recently identified 135 new melanin genes associated with pigmentation.

Important Points

- According to the study published in the journal Science, the skin, hair and eye colour of more than eight billion humans is determined by the light-absorbing pigment known as melanin.
- Historically, darker pigmentation has been needed to protect against ultraviolet radiation in areas closer to the equator and for people who spend hours in direct sunlight.
- As humans moved into areas with less direct sunlight or fewer hours of daylight overall, less melanin was needed.
- Over time, this resulted in melanosomes that produced less melanin, thus absorbing more sunlight.
- The technology developed and used by the research team could also be applied to identify genes that regulate melanin production in fungi and bacteria. Melanin production in fungi and bacteria enables them to be more pathogenic to humans or crops.
- Researchers could develop effective interventions against these microbes and their diseases by discovering and targeting such melanin-producing genes.



About Melanin

- Melanin is produced within special structures called melanosomes, which are found inside melanin-producing pigment cells called melanocytes.
- Melanin is a substance in your body that produces hair, eye and skin pigmentation. It is present in human and animal skin to varying degrees, and is responsible for your unique eye, hair and skin color.
- It also absorbs harmful UV (ultraviolet) rays and protects your cells from sun damage. Melanin is produced within special structures called melanosomes. Melanosomes are found inside melanin-producing pigment cells called melanocytes.
- Although all humans have the same number of melanocytes, the amount of melanin they produce differs and gives rise to the variation in human skin colour.
- People with more melanin generally have darker skin, eyes and hair compared to those with little melanin.
- Using a process called side-scatter of flow cytometry, scientist were able to separate cells with more or less melanin. These separated cells were then analyzed to determine the identity of melanin-modifying genes.

Types of melanin

Eumelanin :

- Eumelanin is responsible for dark colors in skin, eyes and hair. There are two types of eumelanin: black and brown.
- People with brown or black hair have varying amounts of brown and black eumelanin.
- It provides protection against UV radiation by absorbing and dispersing it.
- Pheomelanin
- It is responsible for lighter colors, such as red and yellow.
- It is less effective at protecting against UV radiation compared to eumelanin.
- Neuromelanin: While eumelanin and pheomelanin control the colors of things you see (such as skin, hair and eyes), neuromelanin is responsible for the color of your neurons.

Safe City Project

Why in News

- Minister of State for Home Affairs informed the Rajya Sabha about implementation of the Safe City Project.

Important Points

- Safe City Projects have been approved by the Ministry of Home Affairs with centrally sponsored funding in eight cities initially:
- Ahmedabad, Bengaluru, Chennai, Delhi, Hyderabad, Kolkata, Lucknow, and Mumbai.

The projects involve

- identification of hotspots for crime against women
- deployment of various components including infrastructure, technology adoption
- capacity building in community through awareness programmes which will enable safety for women.
- Safe City Project is a Centrally Sponsored Scheme.
- The project aims to curb crime against women and address safety issues sensitively.
- It aims to use technology and ensure the prompt availability of professionally equipped police personnel to reach women in distress.
- CCTV cameras will be installed in places frequented by women.
- A command and control centre will be set up at police headquarters, district headquarters and police stations.
- Integration of location-based services and crime and criminal databases with CCTV feeds for prompt and effective resolution of women's safety issues at public places.
- Analysis of video and creation of actionable warnings or alerts for preventive and curative actions.



₹2,900 CR ALLOCATED FOR EIGHT CITIES

Centre announced Safe City scheme last year. It is being implemented in eight cities including Hyderabad, Delhi, Mumbai, Kolkata, Chennai, Bengaluru, Lucknow and Ahmedabad

The funds are being released under 'Nirbhaya Fund' after the tragedy of December 2012, in which a woman was brutally raped and murdered in Delhi

₹282 crore allocated to Hyderabad; ₹138-crore works sanctioned

GHMC and Transport department have been given the role of installation of cameras both in the identified areas and also in buses

"Winners are not those who never fails, but those who never quit"

- Dr. APJ Abdul Kalam



Chapter

10

Yojana

(1) Vision for Industry

Over the last decade, India has made significant progress in strengthening the competitiveness of its domestic manufacturing, especially under the Atmanirbhar Bharat and Make in India initiatives. Manufacturing has the highest potential of all sectors to propel job growth, with the potential to create 60-70 million jobs by 2030. The future of manufacturing is sustainability. Through a number of initiatives, the Indian Government is enticing businesses to adopt sustainable manufacturing, including 'Zero Defect-Zero Effect', 'Digital India', and many others. Over the past seven years, India has made substantial improvements in its policy and regulatory environment, making it much easier for enterprises to establish themselves and flourish.



The road to 75 years has not been easy, yet India has come a long way — from a country that saw its wealth drained by its colonial masters to a major player in the global economy. As India enters the Kartavya Kaal, it is time for the country to realise its potential and emerge as a world leader in this post-Covid New World Order.

The Potential of India in the Manufacturing Sector

- According to a FICCI-McKinsey report, by 2047, a growing India is expected to become a high-income nation with six times its current per capita income and to create 60 crore jobs to gainfully employ its growing workforce.
- Achieving this potential will make India an approximately Rs 1500 lakh crore (\$19 trillion) economy in real terms by 2047.
- Manufacturing has the highest potential of all sectors to propel job growth, with the potential to create 60 million to 70 million jobs by 2030.

India could aim to

- Boost overall manufacturing productivity fivefold by 2030 (by tripling labour productivity and doubling capital productivity),
- Achieve 70-80% digital adoption by MSMEs, and Increase the number of World Economic Forum lighthouses tenfold to drive IOT and automation adoption and boost productivity.
- Focusing on the following areas to realise the full potential in manufacturing: New-age Factory of the World:
- Supply chain: India could ensure the supply chain and capture an increased share of key global supply chains valued at between \$800 billion and \$1.2 trillion by 2030. India is well-positioned to leverage Global Value Chains (GVC) for higher economic growth and job creation.
- New-age sectors: India has selected multiple new-age sectors such as mobile phones, solar PV modules, drones, wearables and semiconductors. These new-age sectors would help India gain prominence as a manufacturing hub.
- Plug-and-play cluster zones: State governments could support efforts by creating plug-and-play cluster zones based on their manufacturing strengths.

Embracing the Digital Revolution in Manufacturing

- Industry 4.0 solutions: As per a recent NASSCOM report, the Indian manufacturing industry spent between US 5.5 and US 6.5 billion dollars on Industry 4.0 solutions in FY21.
- Digitisation could improve reliability and value chain resilience.
- Technology grants and international joint ventures could help secure technology expertise that would help propel manufacturing into the digital future.
- Smart manufacturing: The ongoing 5G rollout would play a key role in the transformation to 'smart manufacturing' like Connected Warehouses, Logistics, Fleet Management, etc.

- Skill development programmes: India needs to invest in robust skill development programmes and collaborate with educational institutions and industry bodies to bridge the skills gap.

Leaping towards Sustainable Manufacturing

- The future of manufacturing is sustainability. Customers are looking for products and partners who follow eco-friendly practices, adopt green policies, and share a commitment to sustainability.
- Manufacturers need to prioritise the creation of green alternatives, such as
 - ❑ Bio-based feedstock
 - ❑ Sustainable packaging
 - ❑ Green building materials
 - ❑ 'Zero Defect – Zero Effect'

Strengthening Infrastructure

- India has inefficiencies in terms of a large number of goods transitioning within an industrial value chain, as well as the high cost and lengthy time for transition.
- The country is solving infrastructure challenges with a variety of interventions, such as
 - ❑ Industrial Corridor Development Programme,
 - ❑ PM Gati Shakti National Master Plan, and
 - ❑ National Logistics policy.
- Additionally, state and central governments could strengthen infrastructure in key manufacturing hubs through
 - ❑ Public-private partnerships (PPPs) and
 - ❑ Special-purpose vehicles and
 - ❑ Expand smart-city coverage.

Way Ahead -

- Over the past seven years, India has made substantial improvements in its policy and regulatory environment, making it much easier for enterprises to establish themselves and flourish.
- FICCI is confident that as we move ahead on the path towards India@100, the process of reforms will
- further gather pace and strengthen the foundation on which India will have a world-class industrial sector that is efficient, productive, sustainable, and will imbibe a major export orientation.

(2) Leveraging Technology for Accessible Quality Education

- Modern technologies like Augmented Reality (AR), Virtual Reality (VR), Extended Reality (ER), Artificial Intelligence (AI), and Machine Learning (ML) have revolutionised education enhancing learning experiences. The National Education Policy 2020 (NEP 2020) also envisions sweeping reforms in the education sector through technology to create accessible, equitable, and high-quality education for all.
- The sudden push for online education was driven by the disruption caused by the Covid-19 pandemic. The availability of online classes, internet through fibre connectivity and DTH content delivery through satellites helped to ensure high-quality education delivered at home during this period.



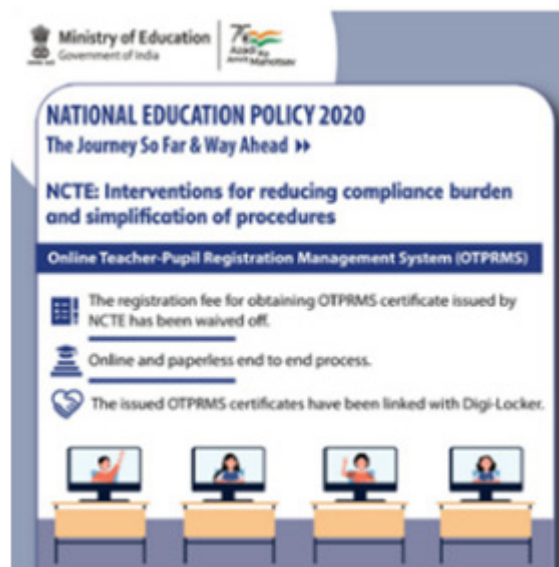
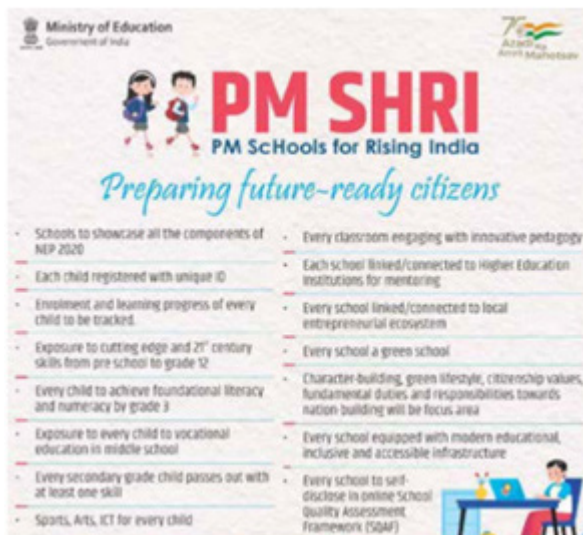
Government initiatives to promote education through technologies

- National Programme on Technology Enhanced Learning (NPTEL): NPTEL, started in 2005, provided high-quality recorded engineering lectures delivered by IIT professors. Subsequently, in 2008, Virtual labs were started to provide simulation-based experiments for all students.

Teacher training platforms :

- ❑ The Amrita Virtual Interactive E-Learning World (A-VIEW), a collaboration between AMRITA

- ❑ University and the Ministry of Human Resource Development (MHRD), was established with the purpose of providing online training to educators.
- ❑ IIT Bombay and IIT Kharagpur launched the ‘Train 10,000 Teachers’ (T10kT) program, which focuses on augmenting the teaching skills of teachers in core engineering and science subjects.
- ❑ AICTE Training And Learning (ATAL) Academy was instituted to facilitate the dissemination of high-quality technical education across the nation.
- SWAYAM platform: SWAYAM platform stands as the world’s largest online free e-learning portal, meticulously designed to realise the goals of accessibility, equity, and quality education across all educational tiers.
- National Internship Portal was established to foster connections between students and industries, including Micro, Small, and Medium Enterprises (MSMEs).
- The National Educational Alliance for Technologies (NEAT) scheme, implemented by the All India Council for Technical Education (AICTE), aims to act as a bridge between ed-tech companies, academic institutions and students.
- Anuvadhani, an artificial intelligence-based translation tool developed by AICTE, is developed to bridge the language gap and provide equal learning opportunities to students across the country. It can translate text files, and enable speech-to-text typing, and editing.
- National Digital Library Project by IIT Kharagpur provides free access to digital books and documents.
- Academic Bank of Credit (ABC): Initiated by the National Education Policy (NEP) 2020, students can store their academic credits and credentials earned in Digilocker. It serves as a credit bank for students that allows them to accumulate, verify, transfer, and redeem their credit which ensures flexibility and enhances learning opportunities for students.



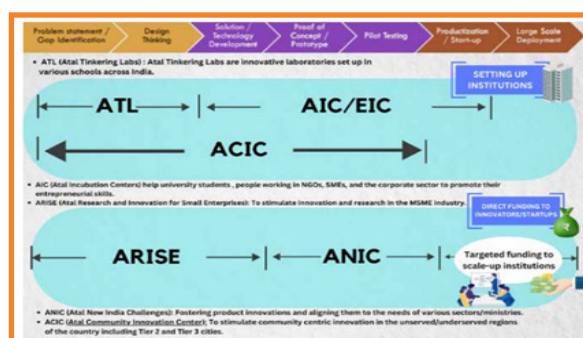
flexibility and enhances learning opportunities for students.

U P S C

September 2023

(3) Atal Innovation Mission

- Innovation is the process of creating value by applying novel solutions to meaningful problems. The article discusses the importance of building a holistic innovation ecosystem in India to foster innovation and entrepreneurship, solve societal challenges, and contribute to the country’s economic growth.
- Innovation’s Role in Economic Growth:
- Historical perspective: Early GDP growth was tied to consumption due to population increase, with limited real growth (0.1% annually) until 1700 AD.
- GDP after the industrial revolution: Post-1750s, the industrial revolution triggered exponential GDP growth through technology and innovation-driven changes.
- Technology-led innovation: Technological innovation fueled economic progress by enhancing productivity, and efficiency, and creating opportunities in various sectors.
- TFP’s significance in GDP growth: Total Factor Productivity (TFP) significantly impacts GDP growth by improving output efficiency through innovation and technological advancement.
- Leading nations’ technological innovation: Technologically advanced nations (e.g., USA, UK, Germany, Japan) have driven GDP growth through substantial investments in research and innovation.



Government's Role in Fostering Innovation

- State-sponsored initiatives have contributed to the development of new technologies and industries. For example, Israel and the USA showcase effective government-led innovation initiatives that have yielded significant results.
- National Innovation Foundation (NIF): India established NIF to empower grassroots technological innovations and preserve traditional knowledge.
- Science, Technology, and Innovation Policy: This policy aims to position India as a global scientific leader and establish a robust Science, Research, and Innovation system (SRISHTI).
- Supporting Innovation Culture: In a diverse country like India, government support is pivotal in cultivating an innovation culture.
- Atal Innovation Mission (AIM): AIM was initiated by the Government of India in 2016. AIM's primary objective is to cultivate innovation and entrepreneurship and it aims to create an environment conducive to generating and implementing innovative ideas

(4) Agriculture

- In the span of 75 years since India's independence, its agricultural landscape has undergone a phenomenal transformation. From struggling with food shortages and depending on foreign aid, India has emerged as a self-sufficient nation in terms of food production and a significant player in the global agricultural arena.



The Green Revolution: From Scarcity to Surplus -

- At the dawn of independence, India faced acute food scarcity, barely able to meet its population's basic needs.
- The turning point came with the Green Revolution, catalyzed by the introduction of high-yielding and disease-resistant crop varieties.
- Scientist Dr. Norman Borlaug's innovations in wheat varieties boosted yields, and coupled with government support under the leadership of doctor MS Swaminathan, led to record-breaking harvests.
- This surge in productivity, termed the Green Revolution, not only ensured food security but also paved the way for self-sufficiency and agricultural exports.
- India leads in sugar, ranks 2nd in rice (after China), and holds 14.14% global wheat production share in 2020.

International Year of Millets: A Nutritional Resurgence

- Recognizing the significance of millets, India celebrated the International Year of Millets in 2023, rebranding them as 'Shree Anna'.
- With targeted strategies and government support, millet production has surged, aiding nutritional security.
- The cultivation of millets has soared, setting the stage for India to become a global hub for these nutrient-rich grains.

Yellow Revolution: Triumph in Oilseeds Production

- The Yellow Revolution marked a breakthrough in oilseed production.
- Innovative cultivation practices and the introduction of advanced crop production technologies led to a dramatic increase in oilseeds output.
- India's oilseed production grew from 108.30 lakh metric tons in 1985-86 to an impressive 400,000 million tons in 2022-23, establishing self-reliance in this crucial sector.

The White Revolution: From Milk Crisis to Global Leadership

- In a similar vein, the White Revolution addressed India's milk crisis. With per capita milk availability dwindling, the National Dairy Development Board (NDDB) chaired by Verghese Kurein launched Operation Flood in the 1970s.
- This initiative established a network of village-level milk cooperatives, modern processing plants, and a seamless supply chain.

- India has been a global leader in milk production for over a decade, with a total production of around 22 crore tonnes in the year 2021-22.

The Blue Revolution: Empowering Fisheries

- Post-independence efforts in the fisheries sector resulted in the Blue Revolution.
- India transformed into the second-largest fish-producing country globally, with policies promoting both marine and inland fisheries.
- The Blue Revolution not only boosted fish production but also elevated India's status as a leading seafood exporter.

(5) Indian Economy

Economic liberalisation and reforms from 1990-2014

- Liberalisation, Privatisation, and Globalisation (LPG) reform: The government implemented policies that dismantled licence raj, encouraged foreign direct investment and promoted privatisation.
- Flexible exchange rate with full convertibility of rupee in the current account and partial convertibility in the capital account.
- New Telecom Policy of 1999: It catalysed the information technology (IT) sector boom in India, generating widespread benefits for other sectors as well.
- The Department of Disinvestment was established to further the disinvestment and privatisation of public sector enterprises.
- Fiscal Responsibility and Budget Management (FRBM) Act: The act was passed to address the fiscal deficit of central and state governments.
- Structural reform in the banking sector: SARFAESI Act 2002 and the deregulation of interest rates were introduced to help banks burdened with bad debts.



New age reforms after 2014

- Since 2014, the government's economic policy focus has been to restore India's growth potential by easing business conditions and significantly enhancing physical and digital infrastructure.
- Simplifying regulatory frameworks: The Insolvency and Bankruptcy Code (IBC) and the Real Estate (Regulation and Development) Act (RERA) were enacted to enhance the ease of doing business.
- Tax reforms: Adoption of Goods and Services Tax (GST), reduction in corporate and income tax rates, abolishment of the retrospective tax, etc. have reduced the tax burden on individuals and businesses.
- GST implementation resulted in broadening the tax base, free flow of goods across states and the formalisation of the economy.
- Average monthly gross GST collections are consistently rising from INR 0.9 lakh crore in FY18 to INR 1.5 lakh crore in FY23 and INR 1.7 lakh crore in the first quarter of FY2024.
- Capital expenditure: Capital expenditure of the central government has increased from 2.8 % of GDP in 2013-14 to 3.8% in 2022-23. This has improved connectivity and modernised infrastructure across the country.
- National Infrastructure Pipeline (NIP) was established to fund infrastructure investment projects of around INR 111 lakh crore spread over five years until 2024-25.
- More than 9,000 NIP projects, with a total investment of over INR 108 lakh crore, are at various stages of implementation.
- Atmanirbhar Bharat and Make in India initiatives to enhance India's manufacturing capabilities and promote exports across various industries.
- Production Linked Incentives (PLIs): implemented across various sectors to attract domestic and foreign investments in the manufacturing sector.
- A New Public Sector Enterprise policy was implemented to limit governments' presence to a few strategic sectors.
- Decriminalising minor economic offences under the companies act 2013 to improve the ease of doing business. 1400 archaic laws have been repealed in the last nine years
- Micro Small and Medium Enterprise (MSME): Emergency Credit Line Guarantee Scheme (ECLGS), revision in the definition of MSMEs, TReDS to address the delayed payments for MSMEs to enhance resilience in the MSME sector.

(1) Promoting Household Food and Nutritional Security

- As per UN FAO, 'food and nutrition security' exist when all people at all times have physical, social and economic access to food, which is consumed in sufficient quantity and quality to meet their dietary needs and food preferences, and is supported by an environment of adequate sanitation, health services and care allowing for a healthy and active life.

Pillars of Household Food and Nutrition Security

- Food Availability : It focuses on ensuring an adequate and consistent supply of diverse food options.
- Food Access: It includes factors such as affordability, physical access to markets, infrastructure for storage and transportation, and social safety nets.
- Food Utilisation: This focuses on maximising the nutritional value of food and ensuring optimal health outcomes.
- Food Stability: This refers to the ability of households to maintain access to food during shocks and crises.
- Governance and Policy: It involves the development and implementation of coherent policies, strategies, and programmes that address all dimensions of food security.
- Empowerment and Capacity Building: It plays a crucial role in enhancing household food and nutrition security. It can include training on sustainable farming practices, nutrition education, entrepreneurship, and leadership skills.



Methods to be Employed for Food and Nutritional Security

- Sustainable Practices: This involves promoting sustainable farming practices that enhance agricultural productivity while minimising environmental impact.
- Diversification of Food Production: This includes promoting traditional and underutilised crops, horticulture, agroforestry, and aquaculture.
- Access Inputs and Technologies: This includes promoting the development and dissemination of improved crop varieties, resilient seeds, and appropriate technologies for smallholder farmers.
- Social Protection Programmes: It includes implementing targeted social protection programmes to address immediate food needs and reduce vulnerability.
- Nutrition Education and Behaviour Change: This implies promoting nutrition education and behaviour change communication to improve household dietary practices.
- Strengthening Health and Nutrition Services: This refers to enhancing access to quality health and nutrition services, particularly for women, children, and vulnerable groups.
- Policy and Governance: This comprises developing and implementing policies and governance frameworks that prioritise food and nutrition security.
- Research and Innovation: It includes conducting research on climate-smart agriculture, nutrition-sensitive interventions, and sustainable food production Systems.

Food & Nutritional Security and Sustainable Development Goals (SDGs) -

- Achieving household food and nutrition security in India is crucial for meeting the Sustainable Development Goals (SDGs).
- SDG 1: No Poverty – Household food and nutrition security play a vital role in poverty reduction. By ensuring access to sufficient, nutritious food, vulnerable households can break the cycle of poverty.
- SDG 2: Zero Hunger — By ensuring that all individuals have access to nutritious food year-round, India can significantly reduce hunger and malnutrition.

- SDG 3: Good Health and Well-being — Access to a diverse and nutritious diet is essential for improving health outcomes.
- SDG 5: Gender Equality — Household food and nutrition security can help address gender inequalities.
- SDG 12: Responsible Consumption and Production — By encouraging the production and consumption of diverse and locally grown foods, India can reduce food waste, conserve biodiversity, promote sustainable farming methods, and minimise the environmental impact of agriculture.
- SDG 13: Climate Action — Household food and nutrition security strategies should be aligned with climate action goals.
- SDG 17: Partnerships for the Goals — Achieving household food and nutrition security requires strong multi-stakeholder partnerships.

(2) Nutritional Management Framework for Rural India

- Introduction: Food and nutrition constitute critical components for maintaining good health, enhancing productivity, and fostering socio-economic development. The Global Nutrition Report, published by the World Health Organization, states that nutrition holds a pivotal role within the 12 Sustainable Development Goals (SDGs) of the United Nations, underscoring its significance.



Why Nutrition is Important ?

- Nutrition refers to the process of consuming food and converting it into sources of energy and other essentials required for life.
- Nutritional deficiency: A shift in consumption patterns towards processed and snack foods from traditional, healthy, homemade diets has led to an increased incidence of nutritional deficiencies.
- Lifestyle disease: Increased nutritional deficiencies along with chemical-based intensive agriculture, modern lifestyle and environmental pollution have contributed to a surge in lifestyle diseases such as obesity, high cholesterol, and diabetes.
- Socio-economic impact: Malnutrition and undernutrition are reported heavily in rural areas, tribal areas and urban slums and among people Below Poverty Line (BPL).
- Weakened immune systems and compromised health have resulted in reduced work output and diminished productivity among adults, as well as elevated child mortality rates.

Government Initiatives

- Integrated Child Development Services – Common Application Software (ICDS-CAS): This system enabled the Anganwadi Workers (AWWs) to track health and nutritional services nationwide, enabling data-driven decisions at the grassroots level.
- POSHAN Abhiyan: Launched in 2018, POSHAN Abhiyan focuses on enhancing nutritional outcomes for children, adolescents, women, and lactating mothers, with a particular emphasis on rural areas.
- POSHAN Tracker : Ministry of Women and Child Development (MWCD) has implemented POSHAN Tracker to track each beneficiary.
- National Nutrition Mission: A comprehensive nationwide programme to enhance the nutritional outcomes for pregnant women, lactating mothers and children by addressing undernutrition, malnutrition and low birth weight.

National Institute of Nutrition

- It publishes the 'Nutrition Atlas' which provides comprehensive data on the nutrition level at the national and state level.
- It developed the 'Nurify India Now' mobile app for assessing nutrients from consumed foods.

Nutritional Management Framework for Rural India

- The nutritional management framework should include all relevant stakeholders and make use of available technologies in creating a data-driven, outcome-oriented nutritional ecosystem.
- The nutritional framework should address the four key categories; Children under 5 years, Pregnant and lactating



women, Young women, and Adolescent women for holistically addressing nutrition issues.

- It should also ensure regular updation and monitoring of key nutritional targets, promote nutritional education programmes and capacity building of government functionaries.

(3) Adequate Nutrition for Women and Children

- Adequate nutrition is essential for women and children due to its direct impact on health, development, and overall well-being. The article emphasizes the importance of proper nutrition for women and children, the consequences of inadequate nutrition, the existing challenges, and the initiatives taken to address this issue.



Importance of Women's Nutrition

- Malnutrition leads to diseases, lower life expectancy, and maternal complications.
- Maternal health impacts childbearing, child-rearing, and overall family welfare.
- Inadequate nutrition in pregnancy leads to low birth weight, stillbirths, and maternal mortality.
- Undernourished women become undernourished mothers, perpetuating intergenerational malnutrition.
- Anaemia is prevalent among pregnant women, leading to higher maternal mortality.
- Poor health reduces productivity, earning capacity, and the ability to care for families.

Challenges in Solving Women's Nutrition Problem

- Awareness Gap: Lack of awareness about the importance of women's nutrition and its impact on maternal and child health.
- Underweight or Obesity: Many Indian women are either underweight or obese, posing risks during pregnancy.
- Gender Bias: Intra-household food distribution often favours men, neglecting women's nutritional needs.
- Access to Services: Unequal access to basic nutrition, health services, and education facilities, especially in rural areas.
- Nutrition Education: Inadequate dissemination of nutrition education across all age groups, genders, and social classes.
- Implementation Hurdles: Effective implementation of nutrition programs at the grassroots level faces obstacles.
- Monitoring and Evaluation: Difficulty in monitoring and evaluating the impact of nutrition interventions.

Initiatives for Solving Women's Nutrition Problem

- Poshan Abhiyan: This flagship program by the Ministry of Women and Child Development aims to improve nutritional outcomes for children, pregnant women, and lactating mothers through various interventions.
- Maternal Health and Nutrition Programs: Initiatives like Pradhan Mantri Matru Vandana Yojana (PMMVY) and Janani Suraksha Yojana (JSY) provide cash incentives and cost-free antenatal care services to pregnant women.
- Prime Minister-Poshan Shakti Nirman (PM-POSHAN): Formerly known as the Mid-day Meal Scheme, it provides nutritional support to primary education students.
- Poshan Tracker: A governance tool by the Ministry of Women and Child Development for transparently tracking nutrition service delivery and identifying malnutrition in children.
- NITI Aayog's "Nourishing India": This document focuses on preventing undernutrition, particularly in the first 1000 days of a child's life.
- Integrated Child Development Services (ICDS): Aim to improve the nutritional status of children below six years of age.
- Scheme for Adolescent Girls (SAG): Provides nutritional support, health check-ups, and education for adolescent girls aged 14-18 years.

(4) Millets – Future Food

- In a world grappling with pressing issues such as climate change, malnutrition, and poverty, an ancient yet highly resilient grain has emerged as a beacon of hope – millets. These small cereal grains, belonging to the



Poaceae family, have garnered attention for their incredible nutritional value, environmental adaptability, and positive impact on various challenges. Often referred to as “Nutri-Cereals,” millets are not just a food source; they are a solution to some of the most critical global issues.

- A Resilient Crop with Climatic and Economic Significance: Millets, originally cultivated in Asia and Africa, have become a symbol of resilience in the face of climate variability.
- As the world grapples with unpredictable weather patterns and water scarcity, millets stand tall as a drought-resistant crop that requires minimal water and thrives even in poor soil conditions.
- Their ability to flourish in arid environments makes them a vital food source for millions of smallholder dryland farmers in these regions.
- Economically, millets play a significant role by offering farmers a sustainable alternative to traditional crops.
- With their low water requirements and suitability for a range of soils and climates, millets serve as a smart risk management strategy for farmers.
- By embracing millet cultivation, these farmers reduce their carbon footprint and contribute to a more resilient agricultural system, ultimately improving their livelihoods.



The Rise of Millets as Superfoods

- Millets are not just staple crops; they are nutritional powerhouses that have earned the label of “superfoods.”
- The term “Nutri-Cereals” aptly describes their high nutritional content. Varieties like sorghum, pearl millet, finger millet, and more offer impressive amounts of fibre, protein, vitamins, and minerals.
- Their unique nutritional composition, including high levels of iron and zinc, low glycemic index, and gluten-free nature, make them an ideal addition to a balanced diet.
- For instance, finger millet boasts three times the calcium content found in milk, making it a potent source of this essential mineral.



Addressing Iron Deficiency

- Recent research led by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) highlighted that millet can significantly improve haemoglobin and serum ferritin levels, effectively reducing iron-deficiency anaemia.

Government Efforts to Promote Millets

- The Government of India has launched a mission to cultivate millets, aiming to achieve nutritional security while following recommendations by NITI Aayog. This initiative includes promoting biofortified millet varieties and integrating millets into various public delivery channels.
- Under the National Food Security Act, state governments are advised to procure millets at minimum support prices and distribute them through the public distribution system.
- Additionally, India’s National Nutrition Mission, POSHAN Abhiyaan, has encouraged the inclusion of millets in programs like Integrated Child Development Services and Mid-Day Meals.