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SAME SEX CIVIL UNION LAWS

THE NOBEL PRIZE

TYPHOON MOLAVE

BRAHMOS

WOMEN IN WORKFORCE

A Monthly Periodical for aspirants of UPSC Examination

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Arise, awake and stop not till the goal is reached.
- Swami Vivekananda

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BHARATI SCRIPT

In News
- Bharati Script

What is Bharati Script?
- Bharati is a **unified script for nine Indian languages.**
- It has been designed to be a common script that can express all the major Indian languages.
- Bharati Script can express: **Hindi/Marathi (Devanagari), Tamil, Telugu, Gujarati, Punjabi (Gurmukhi), Bengali, Oriya, Kannada and Malayalam.**
- The script has been designed using simplest shapes, often borrowing simple characters from various **Indian languages/scripts including English.**

*Note: Bharati script **cannot** express English and Urdu as of now.*

Who developed it?
- Srinivasa Chakravathy's team at IIT Madras.

Need for a common script
- The Roman script is used as a common script for many European languages like English, French, German, Italian etc.
- This facilitates communication across nations that speak and write different languages.
- In India however, most major languages are written in their own unique scripts.
- This pose barriers to communication in a multilingual society like India.
- Thus, a common script for the entire country is hoped to **bring down many communication barriers in India.**

Decoding the script
- Characters in Bharati script are created in a minimalist fashion to express their corresponding sounds.
1. Vowels
2. Consonants
3. Consonant-Vowel Combinations
4. Samyuktakshar (C*V combinations)
- Bharati characters are made up **of three tiers stacked vertically.**
- The consonant at the root of the letter is placed in the centre and the modifiers are in the top and bottom tiers.
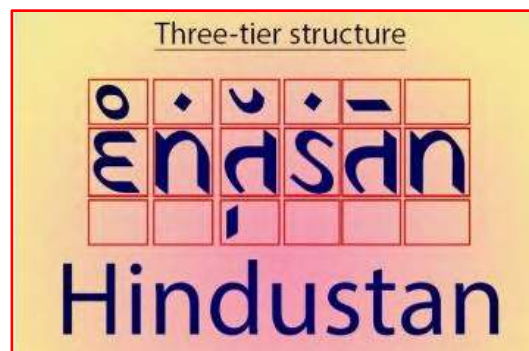
Compatibility with Technology
- Due to its simplicity, Bharati script is ideal for technology development:

  I) Optical Character Recognition (Even at 10-20% noise, Bharati OCR system gives close to 100% Accuracy)

  Optical character recognition or optical character reader (OCR) is the electronic or mechanical conversion of images of typed, handwritten or printed text into machine-encoded text.

  II) Handwritten Character Recognition - realized in an app called Bharati Handwriting Keyboard.
  III) Bharati Transliterator - a tool, based on Google lens that enables the user to read Indian languagesigns in Bharati script.

Bharati Font
- Bharati Fonts let Bharati characters to be typed in word processors such as Microsoft word, Libre Office writer, etc.
- At present, two Bharati fonts are available:
  1. **NavBharati -** supports Devanagari, Tamil, Telugu, and Malayalam scripts.
  2. **SundarBharati -** supports Devanagari, Tamil, Telugu, Kannada, Bengali and Malayalam scripts.

Significance

- Bharati script:
    o can help the next generation of Indians to easily read in Indian languages
    o is an <u>ideal script for languages like Konkani or Tulu</u> that don't have their own script
    o can serve as a <u>writing system for the innumerable tribal languages</u> of India, and languages of the Northeast
    o can act as a <u>link script for migrant Indians</u> who move out of their native state for work
    o can <u>connect the millions of NRI children</u> back to Indian literature
    o can <u>lead to a new system of Braille for Indian languages</u> and even a finger-spelling system for the hearing impaired
    o can <u>shorten the duration of adult literacy programs</u> from 6 months to a few weeks

One Nation, One Script...
Bharati can change how India writes and reads!

INDUS VALLEY CIVILIZATION / GS-I ART & CULTURE

Context

- 2020 marks 100 years of the discovery of Indus Valley Civilization (IVC).
- And a new study has shown **that dairy products were being produced by the Harappans** as far back as 2500 BCE.

Indus Valley Civilization	Features
Period	Bronze Age
Date	3300 BC – 1300 BC
Geographical Range	Indus River Basin; NW India & Eastern Pakistan
Preceded by	Mehrgarh
Succeeded by	Painted Grey Ware Culture
Noted for	Urban planning, baked brick houses, elaborate drainage systems, water supply systems, clusters of large non-residential buildings, and new techniques in handicraft (carnelian products, seal carving) and metallurgy (copper, bronze, lead, and tin)
Status	UNESCO World Heritage Site

Phases

The current chronology is:

Dates	Phase	Era
7000 – 5500 BCE	Mehrgarh I (aceramic Neolithic)	Early Food Producing Era
5500-3300	Mehrgarh II-VI (ceramic Neolithic)	Regionalisation Era 5500-2600
3300-2600	**Early Harappan**	Regionalisation Era 5500-2600
3300-2800	Harappan 1 (Ravi Phase)	Regionalisation Era 5500-2600
2800-2600	Harappan 2 (Kot Diji Phase, Nausharo I, Mehrgarh VII)	Regionalisation Era 5500-2600
2600-1900	**Mature Harappan (Indus Valley Civilization)**	Integration Era
2600-2450	Harappan 3A (Nausharo II)	Integration Era
2450-2200	Harappan 3B	Integration Era
2200-1900	Harappan 3C	Integration Era
1900-1300	**Late Harappan**	Localisation Era
1900-1700	Harappan 4	Localisation Era
1700-1300	Harappan 5	Localisation Era
1300-300	Northern Black Polished Ware (Iron Age)	Indo-Gangetic Tradition

City	River Bank	Province	Year of Discovery	Archaeologist(s)
Harappa	Ravi	Pakistani Punjab	1921	Daya Ram Sahni
Mohenjodaro	Indus	Sind	1922	RD Banerjee
Ropar	Sutlej	Indian Punjab	1953	YD Sharma
Lothal	Bhogava	Gujarat	1957	SR Rao
Kalibangan	Ghaggar	Rajasthan	1959	BB Bal
Chanhudaro	Indus	Sind	1931	MG Majumdar
Alamgirpur	Hindon	Uttar Pradesh	1974	YD Sharma
Sutkagendor	Dasht	Baluchistan	1931	Aurel Stein
Banawali	Haggar	Haryana	1974	RS Bist
Rangpur	Bhadur	Gujarat	1931	MS Vats

Arrange the cities from East to West & North to South
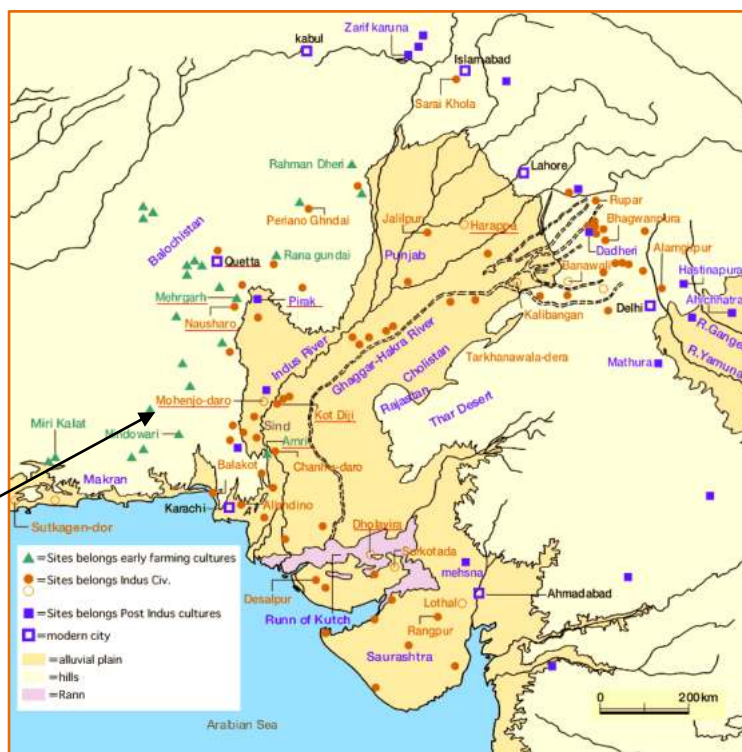
Archaeological Findings

Harappa	Cemetery H & R37; Coffin burial; Phallus worship; Mother goddess,Bullock Carts, Single Roomed Barracks, Granaries, Sandstone Steatite of a youth with muscular body, Bronze Image of a Dog Attacking a Deer, Sandstone Girl Dancer, Reserved slip ware of Mesopotamian Type
Mohenjo-Daro	Prepared garments, Pashupati seal, Bronze statue of a dancing girl, Ivory weight balance, The Great Bath, The Great Granary, Priest king statue (of steatite), human skeleton huddled together
Kalibangan	Lower fortified town, Fire Altar, Boustrophedon style writing, Wooden drainage, Copper ox, Evidence of earthquake, Wooden plough, Camel's bone, 6 types of pottery
Lothal	Dockyard, Port Town, Evidence of Rice, Fire Altar, Ivory weight balance, Copper dog.
Rangpur	Evidence of Rice
Surkotada	Horse bone, stone covered grave, Human ashes
Chanhudaro	Bangle factory, Ink pot, only city without citadel, Carts with seated driver, Small Pot Shell Ornament Makers Factory, Metal Workers Factory, Bead Making Factory Shell Ornament Makers Factory
Balakot	Bangle Factory
Daimabad	Bronze Buffalo, Copper Rhinoceros, Copper Elephant
Amri	Remains of Rhinoceros
Ropar	Dog buried with humans, steatite seal, oval pit burials.
Banawali	Oval shaped settlement, only city with radial streets, toy plough
Dholavira	Only site to be divided into three parts, giant water reservoir, unique water harnessing system, Dam, Embankments, stadium, rock – cut architecture
Balakot	Shell Ornament makers Factory
Rakhigarhi	Skeletons of a 4,500-old woman, Clay plough

Note: *Indus Valley Script has not yet been deciphered. 70% of the city is yet to be excavated.*

Recent Findings

- After studying 59 shards of pottery from **Kotada Bhadli,** in present-day Gujarat, researchers showed the earliest direct evidence of **dairy product processing in IVC.**
- This throws fresh light on the **rural economy of the civilization.**
- Researchers also confirmed the presence of **cattle, water buffalo, goat, cow and** sheep found in the area.
- Until now, there was no evidence of cow from IVC.
- Cows and water buffalo consumed millets, while sheep and goats ate nearby grass and leaves.
- Most of the cattle and water-buffalo died at an older age, suggesting they could have been raised for milk.
- Whereas the majority of goat/sheep died when they were young, indicating they could have been used for meat.
- Milk was produced in surplus so that it could be exchanged and there could have been some kind of trade between settlements.
- This could have given rise to an **industrial level of dairy exploitation.**

AZAD HIND GOVERNMENT — *GS-I MODERN HISTORY*

Context

- October 21 marked the 77th anniversary of Azad Hind Government.

About Azad Hind

- The Provisional Government of Free India or, simply, Azad Hind, was an Indian provisional government established in Japanese occupied Singapore during World War II.
- **Other name:** Arzi Hakumat-e-Azad Hind
- **Head of State and Prime Minister:** Subhas Chandra Bose (1943–1945)
- **Supreme Advisor:** Rashbehari Bose
- **Capital:** Port Blair (provisional)
- **Capital-in-exile:** Rangoon, Singapore and Tokyo City
- **Anthem:** Subh Sukh Chain
- **Motto:** Ittehad, Itmad aur Qurbani(Urdu: Unity, Faith and Sacrifice)

Purpose

- Allying with the **Axis powers**during World War II to liberate India from British rule.
- It was established by Indian nationalists in exile during the latter part of the Second World War in Singapore.
- **Monetary, military and political assistance from Imperial Japan.**
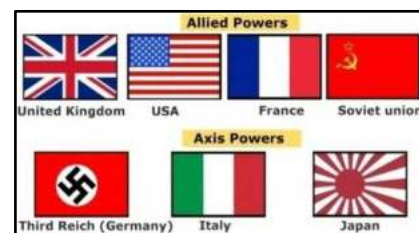
Azad Hind Fauj/INA – A look back

- It was an armed force formed **by Indian nationalists and Imperial Japan** in 1942 in Southeast Asia during World War II. (Before the formation of Azad Hind Government.)
- **Aim -**To secure Indian independence from British rule. It fought alongside Japanese soldiers in the latter's campaign in the Southeast Asian theatre of World War II.
- **Formed under --**Mohan Singh
- Comprised of by **Indian PoWs of the British-Indian Army captured by Japan in the Malayan campaign and at Singapore.**
- INA collapsed and was disbanded within a year after differences between the INA leadership and the Japanese military over its role in Japan's war in Asia.
- Later, Rash Behari Bose handed over INA to Subhas Chandra Bose.
- It was revived under the leadership of Subhas Chandra Bose after his arrival in Southeast Asia in 1943.
- The army was declared to be the army of Bose's Azad Hind Government.
- Under Bose's leadership, the INA drew ex-prisoners and thousands of civilian volunteers from the **Indian expatriate population in Malaya (present-day Malaysia) and Burma.**
- This second INA fought along with the Imperial

(Clockwise from top) Bose with INA; its currency was used in Moirang, Manipur, during Azad Hind government; a stamp issued on 25th anniversary of Azad Hind govt

> Subhas Chandra Bose formed the provincial government of Azad Hind in Singapore on Oct 21, 1943. With Indian leaders in prison and people unarmed, he said it was not possible to set up the provisional government in India or launch an armed struggle from within
> Nataji's declaration guaranteed Indian citizens religious liberty as well as equal rights and opportunities. It declared its resolve to... transcend all the differences fostered by an alien government
> 3 INA officers, Capt Shah Nawaz Khan, Capt P K Sahgal and Lt G S Dhillon, were branded traitors by the British and put on trial at Red Fort. The swelling tide of support for the trio led to their release
> On July 8, 1945, Netaji laid the foundation of INA War Memorial to commemorate INA's 'Unknown Warrior'

Japanese Army against the British in Imphal and Kohima, and later against Burma.

Significance of Azad Hind Government

- The government of Azad Hind had its **own currency, court and civil code.**
- Its existence gave a **greater legitimacy to the independence struggle** against the British.
- Japan also handed over the Japanese occupied Andaman and Nicobar Islands in 1943 to INA.
- For the first time tri-colour flag for Indian Independence was hoisted by Netaji Subhash Chandra Bose **in Port Blair-Shahid Swaraj Dweep** on 30 December 1943.
- It was on 14 April 1944 that the flag of the Indian National Army (INA) was for the second time hoisted on the Indian soil of Moirang inManipur.

Aftermath

- The Azad Hind Government came to an end with the defeat of axis powers in WWII & the disappearance of Subhash Chandra Bose in 1945.

BUNDI   GS-I   ART & CULTURE

Context

- Recently, the Ministry of Tourism organized Dekho Apna Desh Webinar series titled "**Bundi: Architectural Heritage of a Forgotten Rajput Capital."**

The Background of Bundi

- In ancient times, Bundi was inhabited by various local tribes like-The Parihar Tribes, Meena tribes.
- Later, **Rao Deva** took over Bundi from Jaita Meena in 1242. He renamed the surrounding area as **Haravati or Haroti** and the rulers came to be known as Hada Rajputs.
   ✓ Hadas are a branch of the **Chauhan Rajput community**. They claim descent from the Suryavansha (Solar dynasty)
- Thus, Bundi remained the capital of this **Hada Rajput province** in south-eastern Rajasthan.
- For the next two centuries, the Hadas of Bundi were the **vassals of the Sisodias of Mewar** and ruled by the title of Rao until 1569.
- In 1569, Emperor Akbar conferred the **title of Rao Raja upon Rao Surjan Singh** after the surrender of Ranthambore Fort and his submission to Akbar.

> Ranthambore Fort lies near the city of Sawai Madhopur, Rajasthan. It is a formidable fort having been a focal point of the historical developments of Rajasthan. The fort was held by the Chahamanas (Chauhans) until the 13th century, when the Delhi Sultanate captured it. During reign of Rana Udai Singh I of Mewar Kingdom (1468–1473) the fortress had passed to the Hada Rajputs of Bundi.
> In 2013, the fort was declared a **UNESCO World Heritage Site.**

- In 1632, **Rao Raja Chattar Sal** became the ruler. He was one of the most valiant, principled and just kings of Bundi.
- He built the temple of **Keshavarao at Keshoraipatan and Chathra Mahal** at Bundi.
- Despite being a Vassal State of Mughal empire, **Hada rulers retained their Hindu religious and cultural traditions.**
- Bundi is also known as **City of stepwalls, blue city and also as Chotti Kashi.**
- Bundi was known as Chotti Kashi owing to presence of over hundred temples within and around the Hada capital.

Phases of Temple Architecture in Bundi

- **Early phase** –Classical Nagara style.
- **Later phase-** Amalgamation of traditional haveli with the classical Nagara style.
- **Third Phase-** Jain temples.
- **Fourth Phase-** A fourth temple type emerged in the form of raised or elevated temple.

Note: *Absence of monumentality in their scale is a distinctive feature of temples in Bundi.*

Architectural heritage of Bundi can be classified in six typologies: –

1) Garh (Fort)
- Taragarh

- Chattar Mahal
- Ummed Mahal

2) Garh Mahal (Royal Palace)
- Bhj Mahal

3) Baori (Step well)
- Khoj Darwaja ki Baori

- Bhawaldi Baori

4) Kund (Stepped tank)
- Dhabhai ji ka Kund
- Nagar Kund & Sagar Kund
- Rani Kund

5) Sagar mahal (Lake Palace)
- Moti Mahal
- Sukh Mahal
- Shikar Burj

6) Chhatri (Cenotaph)
- Chaurasi

Taragarh Fort
- Taragarh Fort was constructed by **Rao raja Bair Singh** in 1354.
- The palace is a tribute to Rajput style.
- The fort includes **Hazari Darwaza, Ratan Daulatkhana, Ratan Niawas, Chatra mahal, Badal Mahal & Moti Mahal.**

Sukh Mahal
- Located on **banks of JaitSagar lake,** the palace was constructed **by Rao raja Vishnu Singh** in 1773 A.D.

Rani Ki Baori
- Bundi has more than 50 stepwells and rightly known as **city of stepwalls**.
- Raniji ki Baori, also known as 'Queen's Stepwell' was built **by Rani Nathavati, queen of the ruling king Rao Raja Anirudh Singh** of Bundiin 1699.

84 Pillared Cenotaph
- 84 Pillared Cenotaph is a structure supported by 84 columns.
- Commissioned by **Rao Anirudh,** the Maharaja of Bundi, this cenotaph was constructed in memory of his nurse, Deva, under whose love and guidance the prince grew up.
- ✓ A cenotaph is an empty tomb or a monument erected in honor of a person or group of people whose remains are elsewhere.

Dekho Apna Desh
- Dekho Apna Desh Webinar Series is an effort to showcase India's rich diversity **under "Ek Bharat Shreshtha Bharat Programme."**
- The objective of this webinar series is to create awareness about and promote various tourism destinations of India.
- This webinar is heard live by people from all across the world.
- An initiative of **Ministry of Tourism**, Dekho Apna Desh is presented in **technical partnership with National e Governance Department, Ministry of Electronics and Information Technology (MeitY).**

● LIFE IN MINIATURE PROJECT / *GS-I ART & CULTURE*

Context
- Recently, Ministry of State for Culture and Tourism virtually launched "Life in Miniature" project.

About
- The Project is a **collaboration between the National Museum, New Delhi; Ministry of Culture, and Google Arts & Culture today.**

Purpose
- Under this project several hundred miniature paintings from the National Museum, New Delhi **can be viewed online** on **Google Arts & Culture App**by people around the world.
- Users will be able to see famous miniature collections like the Ramayana, Royal Saga, Pahari style paintings in extraordinary detail.
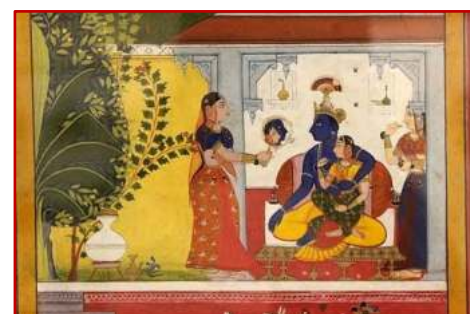
Technology used

- On this App, online viewers can experience the **first Augmented Reality-powered art gallery**.

> **What is Augmented Reality?**
> - Augmented reality (AR) is an interactive experience where the objects that reside in the real world are enhanced by computer-generated perceptual information.
> - AR fulfills three basic features:
>   - ✓ a combination of real and virtual worlds,
>   - ✓ real-time interaction, and
>   - ✓ accurate 3D registration of virtual and real objects.

- Thus, people can explore a virtual space **and walk up to a selection of miniature paintings**.
- The project uses technologies like **machine learning, augmented reality and digitization** with **high-definition robotic cameras**, to showcase these special works of art.
- The App is also **backed by Artificial Intelligence**.
- **"Magnify Miniatures"** feature in the App- enables online users to explore multiple artworks simultaneously.

About The National Museum, New Delhi

- The National Museum, New Delhi, under the Ministry of Culture, is the premiere cultural institution of the Nation.
- The Museum has antiquities & art objects, **both of Indian and Foreign origin** covering more than 5,000 years of our cultural heritage.

About Google Arts & Culture

- Google Arts & Culture puts the collections of more than 2,000 museums at one's fingertips.
- It's an immersive way to explore art, history and the wonders of the world.
- The Google Arts & Culture app is free and available online for iOS and Android.

SIR SYED AHMED KHAN
GS-I MODERN HISTORY

Context

- Birth anniversary

About

- Sir Syed Ahmed Khan was an educationist, a politician, philosopher, social reformer and a historian.
- He is considered as the pioneer of Muslim nationalism in India.

Educationist

- Believing that the future of Muslims was threatened by the rigidity of their orthodox outlook, Sir Ahmad began promoting Western–style scientific education.
- He founded modern schools and journals and organized Islamic entrepreneurs.
- Established -
  - Gulshan School at Muradabad
  - Victoria School at Ghazipur in 1863, and a scientific society for Muslims in 1864.
  - In 1875, founded the **Muhammadan Anglo-Oriental College**, **the first Muslim university in Southern Asia.**
  - It was the predecessor of Aligarh Muslim University.

1857 Revolt

- Sir Syed supported the British during the 1857 uprising.
- In 1859,he published the booklet **Asbab-e-Baghawat-e-Hind (The Causes of the Indian Revolt)** in which he studied the causes of the Indian revolt.
- It critiqued British policies that he blamed for causing the revolt.
- At first he believed in Hindu-Muslim unity but later resolved to the two-nation theory.

Social Reformer
- He pushed for social reforms and was a champion of democratic ideals and freedom of speech. In one of his essays he wrote, "Freedom of expression is the right of everyone"

Works
- He founded the **Scientific Society in 1863** to translate major works in the sciences and modern arts into Urdu.
- He released two journals to this end —
    1. The **Aligarh Institute Gazette**, which was an organ of the Scientific Society, and
    2. The **Tehzib-ul Akhlaq**, known as the Mohammedan Social Reformer in English.

Avid Historian
- He was the **first person to publish an archaeological study** in an Indian language.
- As a result, he was also named as an honorary **member of the Royal Asiatic Society.**
- He also collected sculptures and rare arte facts, including those of Hindu deities.

Critique of INC
- He was critical of the Congress and said it was essentially a party of Bengali Hindus who could not best represent the viewpoint of a Muslim population.
- He called for greater representation of Muslims.
- In later years, he supported the Two- Nation Theory and opposed the National Movement.

BHAGAT SINGH — *GS-I MODERN HISTORY*

Context
- Birth anniversary.

About
- Bhagat Singh was an Indian socialist revolutionary.

Views
- Initially supported Mahatma Gandhi in Non-Cooperation Movement.
- Turned to revolutionary nationalism after Gandhiji withdrew NCM post Chauri Chaura incident.
- Inspired by Marxist ideologies.
- By 'revolution' Bhagat Singh **never meant violent strife** but a systemic change.
- He aimed to bring about **a revolution which would end all exploitation of man by man.**
- He underscored the grave danger communalism posed to the country and its freedom struggle.

Contributions
- Founded the **Naujawan Bharat Sabha** in 1926.
    ✓ The association sought to foment revolution against the British Raj by gathering together worker and peasant youths.
- Established the **Hindustan Socialist Republican Association (HSRA**) along with Sukhdev, Chandrashekhar Azad and others in 1928.
    ✓ Aimed to overthrow British rule.
- **Part of Lahore Conspiracy Case**
    ✓ To avenge the killing of Lal Lajpat Rai, Bhagat Singh, Raj guru, Jai Gopal and Sukh Dev conspired to kill the police chief, Scott. But my mistake they shot on the DSP – J. P. Saunders, who was killed on the spot.
- **Part of Central Assembly Bombing Case**
    ✓ Along with Batukeshwar Dutt; Singh hurled a bomb in the Central Assembly at Delhi.
    ✓ Reason- As a mark of protest **against the Public Safety Bill.**
    ✓ Aim: 'to make the deaf hear'. The bomb was deliberately made harmless.
- Coined a powerful slogan **'Inquilab Zindabad'** which became the slogan of India's armed struggle.

Martyrdom
- Executed along with Rajguru, Sukhdev and others on 24 March 1931.

"By crushing individuals, they cannot crush ideas."- Bhagat Singh

TECH FOR TRIBALS

GS-I   INDIAN HERITAGE

Context
- Recently, **Ministry of Tribal Affairs** launched the "Tech for Tribals" initiative.

About the initiative
- "Tech for Tribals" is a program to make tribal of India "Aatmanirbhar", focusing to **bridge the gap between tribal entrepreneurs and urban markets.**
- Under this the beneficiaries will undergo a 30 days training program over six weeks comprising 120 sessions.

Approach
- TRIFED supported by **Ministry of MSME**, will focus on capacity building and impart entrepreneurship skills to tribal forest produce gatherers enrolled in Self Help Groups (SHGs) under the **Pradhan Mantri VanDhan Yojana (PMVDY).**
- TRIFED has also tied up with reputed national institutions such as IIT, Kanpur; for conducting Vandhan-ESDP Training Programs.
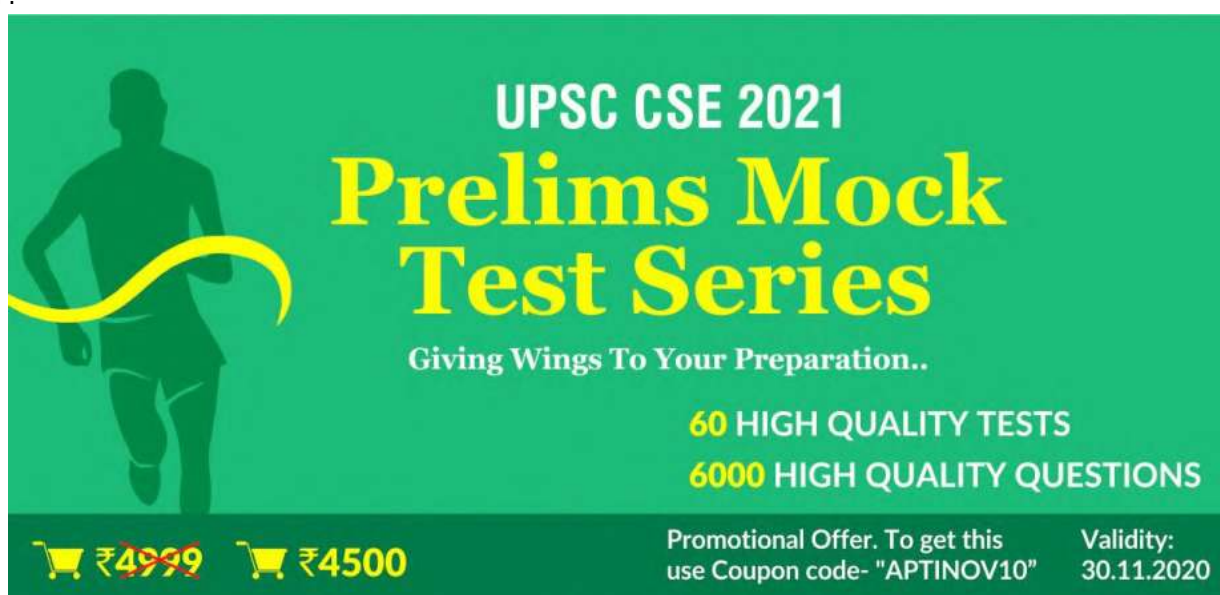
Broader objective
- Holistic development of Tribes with a focus on **entrepreneurship development, soft skills, IT, and business development.**
- Bringing about **socio-economic development of tribal** of the country by institutionalizing the trade of Minor Forest Produce (MFP) & Surplus Agricultural Produce (SAP) collected/ cultivated by them.

TRIFED
- The Tribal Cooperative Marketing Development Federation of India (TRIFED) was established in 1987 under the **Multi-State Cooperative Societies Act, 1984.**
- It is a National level Cooperative body under the administrative control of the **Ministry of Tribal Affairs.**
- **Basic mandate:** bringing about socio-economic development of tribal of the country by institutionalizing the trade of Minor Forest Produce (MFP) & Surplus Agricultural Produce (SAP) collected/cultivated by them.

Van Dhan Scheme
- Van Dhan Scheme is an initiative of the **Ministry of Tribal Affairs and TRIFED**.
- It was launched in 2018 and seeks to improve tribal incomes through value addition of tribal products.
- **Nodal Department:** Ministry of Tribal Affairs at Central Level & TRIFED at the National Level.
- Under Van Dhan, 10 Self Help Groups of 30 Tribal gatherers are constituted.
- The establishment of "Van Dhan Vikas Kendra" is for providing skill upgradation, capacity building training and setting up of primary processing and value addition facility.
- They are then trained and provided with working capital to add value to the products, which they collect from the jungle i.e MFP.

ZOMBIE FIRES   *GS-I GEOGRAPHY*

Context
- According to a new study 'zombie fires' are becoming more frequent in the Arctic region.

About
- A 'zombie fire' is a **fire left from a previous growing season.**
- Because Arctic soils are often densely packed with flammable organic matter, such as peat, above ground fires that burn themselves out can leave the ground smoldering.
- When winter comes, snow can actually insulate the smoking mat from the cold air above as it consumes peat and pockets of flammable methane gas.
- These conditions can sometimes allow a zombie fire to keep burning until temperatures warm and the snow melts away.
- When the weather warms further, the fire can reignite.

Findings
- Fires in the Arctic are spreading to areas which were formerly fire-resistant.
- The tundra — north of the Arctic Circle — is drying up and vegetation there like moss, grass, dwarf shrubs, etc are starting to catch fire.
- In 2019 and 2020, burning occurred well above the Arctic Circle, a region not normally known to support large wildfires.
- Nearly all of this year's fires inside the Arctic Circle occurred on continuous permafrost, with over half of these burning on ancient carbon-rich peat soils.
- As per the World Meteorological Organization (WMO), June 2019 was Earth's warmest June on record. Due to large part to this heat surge, wildfires are now running rampant in Siberia, Greenland, Alaska and Canada, producing plumes of smoke visible from space.

Why is the Arctic warming up so fast?
- The Arctic's extreme warming, known as **Arctic amplification or polar amplification**, is due to three factors:

Albedo
- One, the region's reflectivity, or **albedo**—how much light it bounces back into space—is changing as the world warms?
- Since ice is white, it reflects the sun's energy.
- Sea ice is melting rapidly in the Arctic, the darker ocean surface is absorbing more of the sun's heat due to the removal of white surface.
- That's warming the region's waters, and potentially raising temperatures on land as well.

Changing Currents
- The second factor: changing currents. Ocean currents normally bring in warmer water from the Pacific, and colder water exits out of the Arctic into the Atlantic.
- But those currents are changing because more melting ice is injecting the Arctic Ocean with freshwater, which is less dense than saltwater, and therefore floats above it.
- The missing ice also exposes the surface waters to more wind, speeding up the **Beaufort Gyre in the Arctic,** which traps the water it would normally expel into the Atlantic.
- This acceleration mixes up colder freshwater at the surface and warmer saltwater below, raising surface temperatures and further melting ice.
  - The Beaufort Gyre is one of the two major ocean currents in the Arctic Ocean, it is roughly located north of the Alaskan and Canadian coast.
  - An ocean gyre is a large system of circular ocean currents formed by global wind patterns and forces created by Earth's rotation.
  - The movement of the world's major ocean gyres helps drive the "ocean conveyor belt." The ocean conveyor belt circulates ocean water around the entire planet.
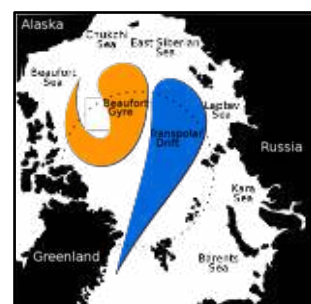
Influence of Ocean Current on Weather
- Ocean Currents drive the powerful **polar jet stream**, which moves hot and cold air masses around the Northern Hemisphere.

- This is a product of the temperature differences between the Arctic and the tropics.
- But as the Arctic warms, the jet stream now undulates wildly north and south.
- This has been injecting the Arctic with warm air in the summer.

Jet Streams

The polar jet stream is found high up in the atmosphere where the **Ferrell and Polar cells** come together. A jet stream is a fast-flowing river of air at the boundary between the troposphere and the stratosphere. Jet streams form where there is a large temperature difference between two air masses.
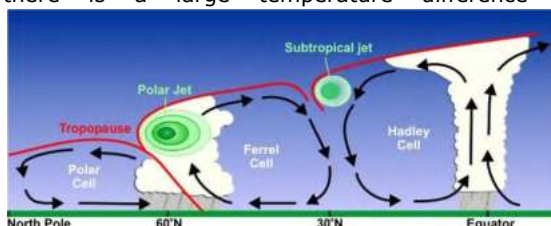
Impact of wildfires

- The fires are **releasing copious volumes of previously stored carbon dioxide and methane** - carbon stocks that have in some cases been held in the ground for thousands of years.
- Thus the fires and record temperatures have the potential of **turning the carbon sink into a carbon source** and increasing global warming.
- A lot of the particulate matter from these fires will eventually come to settle on ice surfaces further north, darkening them and thus accelerating melting.
- Greenhouse gases emitted will further **exacerbate greenhouse warming**, leading to more fires.
- Arctic infernos released 50 megatons of carbon dioxide—the equivalent of Sweden's total annual emissions—into the atmosphere in June alone.
- **Vicious cycle:** Climate change-induced heat waves trigger Arctic wildfires, which in turn contribute to climate change by releasing carbon dioxide and pollutants into the atmosphere.
- Temperatures in the Arctic have been increasing at a much faster rate than the global average.
- It's all part of a process of **Arctic amplification.**

Tackling Arctic Wildfires

- There is a need to understand the nature of fires in the Arctic which are evolving and changing rapidly.
- There is also an urgent need of **global cooperation, investment and action in monitoring fires**.
- It important to **learn from the indigenous peoples of the Arctic** about how fire was traditional used.
- New permafrost- and peat-sensitive approaches to wild land fire fighting are needed to save the Arctic.

COAL SECTOR   *GS-I GEOGRAPHY*

Context

- A special court sentenced former Union Minister Dilip Ray and three others to three years of jail term for irregularities in the allocation of the **Brahmadiha coal block in Jharkhand** in 1999.

Coal

- Coal is a combustible black **sedimentary rock**, formed as rock strata called coal seams.
- Coal is mostly carbon with variable amounts of other elements; chiefly hydrogen, sulfur, oxygen, and nitrogen.
- Coal supplies about a quarter of the world's primary energy and two-fifths of its electricity.

Coal in India

- Coal in India was **first mined in 1774** by East India Company in **Raniganj Coalfield** along the Western bank of Damodar River.
- Today, India has the **fifth largest coal reserves in the world**.

- India is the **second largest producer of coal in the world**, after China.
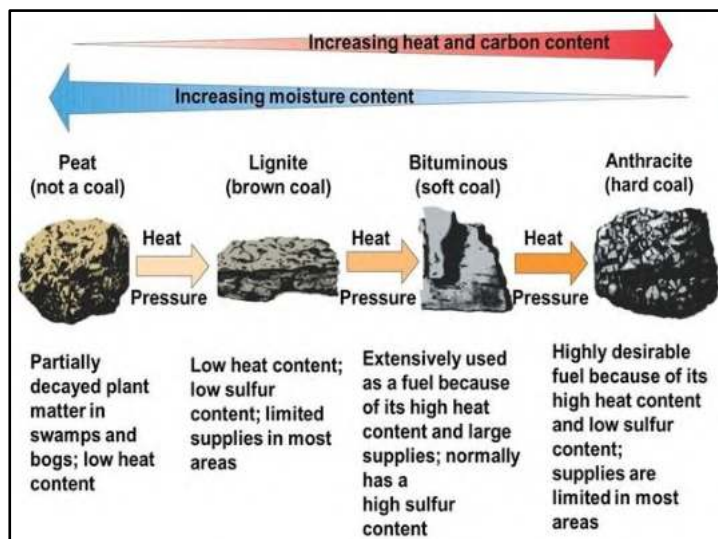
Types of coal on the basis of Time period:
Gondwana coal: Around **98 per cent of India's total coal reserves are from Gondwana times**. This coal was formed about 250 million years ago.
Tertiary coal/Lignite is of younger age. It was formed from 15 to 60 million years ago.

Distribution & Key Statistics

Reserves in Billion tonne

	Percentage
JHARKHAND	26%
ODISHA	24%
CHATTISHGARH	18%
WEST BENGAL	10%
MADHYA PRADESH	9%
TELENGANA	7%
MAHARASHTRA	4%
OTHERS	2%
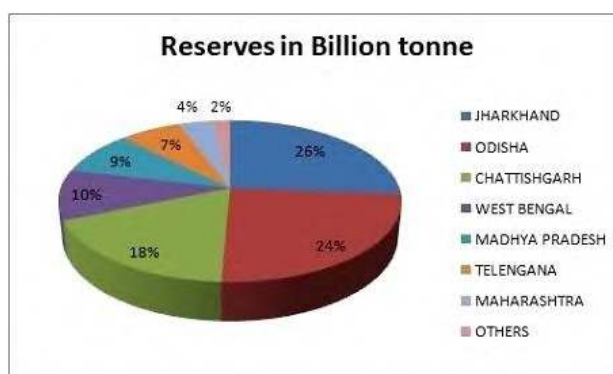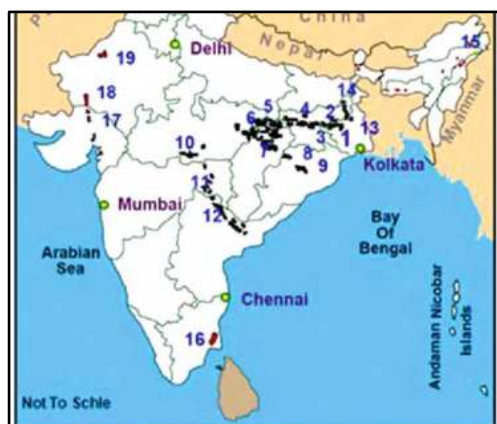
GONDWANA COALFIELDS			
1.	Raniganj	2.	Jharia
3.	Bokaro	4.	North Karanpura
5.	Singrauli	6.	Sohagpur
7.	Korba	8.	Ib-valley
9.	Talchir	10.	Satpura
11.	Wardha	12.	Godavari
13.	Birbhum	14.	Rajmahal
TERTIARY COAL / LIGNITE FIELDS			
15.	Assam-Mehgalaya	16.	Neyveli
17.	Cambay	18.	Barmer-Sanchor
19.	Bikaner	20.	Jammu and Kashmir

IMPORTANT COAL FIELDS OF GONDWANA

	STATE	COAL FIELDS
Lower Gondwana	West Bengal	Raniganj,Bankura
	Bihar	Jharia,Giridih,Bokaro,Daltonganj,Karanpur,Ramgarh
	Odisha	Talchir,Rampur-Hingir(Sambalpur District)
	Andhra Pradesh	Singareni,Kamavaram
Lower & upper Gondwana	M.P	Umaria,Singrauli,Korba,Chirmiri,Sohagpur,Bisrampur,Mohapani
	Maharastra	Kota,Chikiyala,Rajur,Bandar
Upper Gondwana	Gujurat	Ghunkeri

Fuel type	June 2019 (actual)
Unit	GW
Coal	201
Renewable	79
Hydro	45
Gas	25
Nuclear	7
Total	358

IMPORTANT COAL FIELDS OF TERTIARY

STATE	COAL FIELDS	
Assam	Umasor,Charogaon,Jarain	Khasi & jaintia hills
	karaibari,Tura,Sogring	Garo hills
Jammu & Kashmir	Ladda,Kalkoth,Methkha	
Rajasthan	Palana(in Bikanir)	
Tamil Nadu	Neyvalley,Cuddalore	
Kerala	Varkala,Quilon	
Gujurat	Umarsar(in kutch)	

Figure 1.7: Proved reserves of coal at end 2018
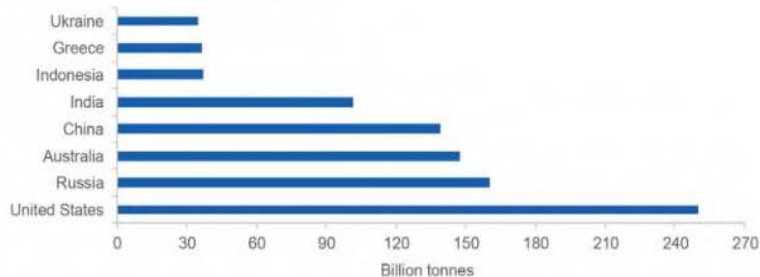
Source: BP (2019) Statistical Review of World Energy

Figure 1.8: India's thermal coal production and consumption

Note: Data is for the Indian financial (April to March)
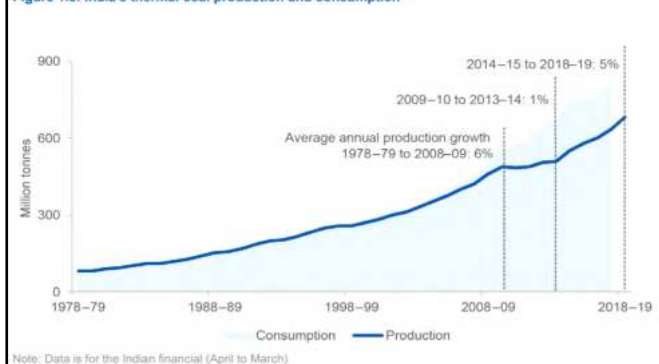
India's Grade - wise Coal Imports

Grades	FY15	FY16	FY17	FY18	FY19
Non Coking Coal	183.77	167.65	147.59	153.03	182.8
Coking Coal	45.4	47.85	47.37	53.1	53.21
Pet Coke	5.83	9.92	14.93	11.65	8.16
Met Coke	3.33	3.06	4.16	4.5	4.87
Anthracite	0.73	0.63	0.93	1.21	1.31
Grand Total	239.08	229.1	214.99	223.5	250.35

Quantity in MnT
Source: CoalMint

India - Coal Imports by Source in Jan-Dec 2019

(jan 2020 ; source: refinitiv ; % of import volume)
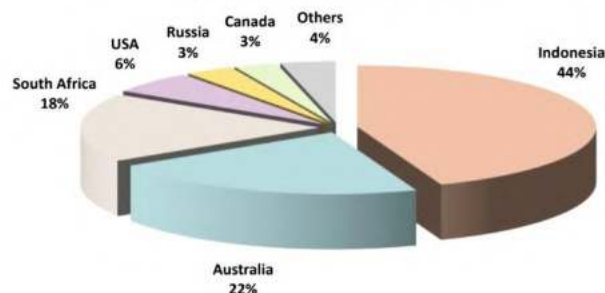
India's coking coal imports

In mln tonnes

* FY 2019-20 data up to Oct. 2019
Government data
Gaurav Dogra| REUTERS GRAPHICS

* **Coking coal, is a grade of coal that can be used to produce good-quality coke.** *Coke is one of the key irreplaceable inputs for the production of steel. There are many varieties of coal in the world, ranging from brown coal or lignite to anthracite. Coke is produced by heating coking coals in a coke oven in a reducing atmosphere.*

Petroleum coke is a byproduct of the oil refining process.

Key government agencies include:
The Ministry of Coal:
Responsible for the formulation of policies and strategies for coal exploration, project approvals and other issues relating to the production, supply, distribution and pricing of coal in India.53 The Ministry of Coal also sets production targets and other performance indicators for Coal India through a Memorandum of Understanding (MoU).
The Coal Controller:
A subordinate office of the Ministry of Coal which sets standards and procedures for assessing coal quality, inspects coal quality, performs an arbitrator role in the event of quality disputes, issues project approvals, collects excise duties and manages coal-related statistics.54
State governments:
Approve mining licences and leases — which are required before the Ministry of Coal grants final project approval — and sets royalty rates.

Why does India import coal when it has enough?

- India **does not have enough reserves of good quality coal especially coking coal** that is used as a raw material in steel making and allied industries.
- Most of it is imported from <u>Indonesia, South Africa, Russia and Australia.</u>
- Thus, the imports are mainly to compensate the lack of good quality coal, especially coking coal.
- Plus, there is a gap between demand and domestic production capacity.
- In FY19, the country produced around 730 mt of coal, while the consumption was close to 965-970 mt.

Way ahead

- For Coking coal India would have to depend upon imports only.
- However, rest of the imports can be substituted by ramping up coal production.
- For these, bottlenecks in domestic coal production need to be removed. Eg- issues in acquiringland and strict rules and regulations; mismatch ofdemand and supply of railway wagons for transportation &coal off take; issues in clearances etc.
- The government has been progressively liberalizing the coal sector in recent times.

Examples

- National Mineral Policy (NMP) approved in 2019, to ensure transparency in the allotment of mining blocks.
- 100% FDI under the automatic approval route allowed for the sale of coal and coal mining activities.
- Amendment of Mines and Minerals (Development and Regulation) Act (MMDRA) 1957, for seamless transfer of clearances.
- Removal of end user restrictions. Permitting commercial coal mining for local and global firms. Now, private players can participate in the auctions.

Note: The Coal Industry in India was nationalized during 1972-73.

TYPHOON MOLAVE

GS-I GEOGRAPHY

Context

- Recently, Typhoon Molave affected more than a million people in Vietnam.

About

- Typhoon Molave, <u>known in the Philippines as Typhoon Quinta,</u> was a strong tropical cyclone that caused widespread damage in the Philippines and Vietnam.

Where do Tropical Storms form?

Tropical storms form between approximately 5° and 30° latitude North or South of the equator.

Tropical Cyclones

- A tropical cyclone is a rapid rotating storm originating over tropical oceans from where it draws the energy to develop.
- It has a low pressure centre and clouds spiraling towards the eyewall surrounding the "eye", the central part of the system where the weather is normally <u>calm and free of clouds</u>. It forms in Troposphere.
- Tropical cyclones rotate anti-clockwise in the northern hemisphere.
- Tropical cyclones are referred to by different names depending on where they originate in the world.
  - ✓ Hurricanes occur in the Atlantic Ocean and the eastern north Pacific Ocean.
  - ✓ Typhoons occur in the western Pacific Ocean.
  - ✓ Tropical cyclones occur in the south Pacific Ocean and Indian Ocean.

Typhoon

- A typhoon is a **mature tropical cyclone** that develops **between 180° and 100°E in the Northern Hemisphere.**
- This region is referred to as the Northwestern Pacific Basin.
- It is the <u>most active tropical cyclone basin on Earth</u>, accounting for almost one-third of the world's annual tropical cyclones.
- **Saffir–Simpson Hurricane Scale** is used to measure Typhoons.

Minimal

Cyclone Category	Wind Speed in Km/h	Damage Capacity
01	120-150	Minimal
02	150-180	Moderate
03	180-210	Extensive
04	210-250	Extreme
05	250 +	Catastrophic

Type of Disturbances	Wind Speed in Km/h
Low Pressure	Less than 31
Depression	31-49
Deep Depression	49-61
Cyclonic Storm	61-88
Severe Cyclonic Storm	88-117
Very Severe Cyclone	118-221
Super Cyclone	More than 221

Category	Australian name	US*	NW Pacific	Arabian Sea /Bay of Bengal
-	Tropical low	Tropical depression	Tropical depression	Depression or severe depression
1	Tropical cyclone	Tropical storm	Tropical storm	Cyclonic storm
2	Tropical cyclone	Tropical storm	Severe tropical storm	Severe cyclonic storm
3	Severe tropical Cyclone	Hurricane	Typhoon	Very severe cyclonic storm
4	Severe tropical cyclone	Hurricane	Typhoon	Very severe cyclonic storm
5	Severe tropical cyclone	Hurricane	Typhoon	Super cyclonic storm
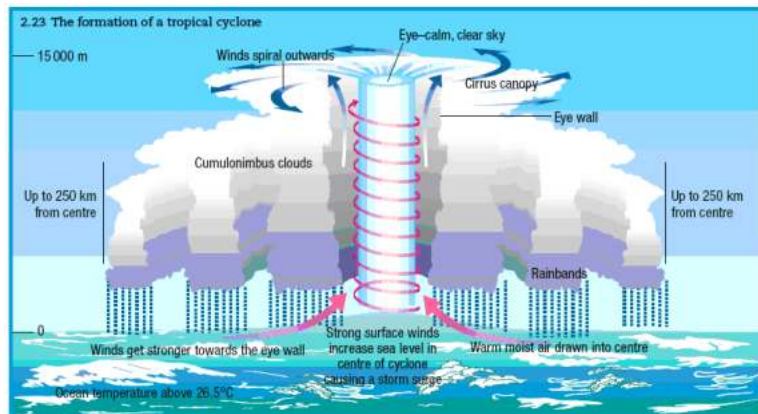
Note: Recently, Hurricane Delta also made landfall in the US state of Louisiana.

Hurricane

- Hurricanes originate in the Atlantic basin, which includes the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico, the eastern North Pacific Ocean, and the central North Pacific Ocean.
- A six-year rotating list of names, updated and maintained by the **World Meteorological Organization**, is used to identify these storms.
- When a storm's maximum sustained winds reach 74 mph, it is called a hurricane.

Conditions for Formation of Tropical Cyclones

There are six main requirements for tropical cyclogenesis:
  I.   sufficiently warm sea surface temperatures,
  II. atmospheric instability,
  III. high humidity in the lower to middle levels of the troposphere,
  IV. enough Coriolis force to sustain a low pressure center,
  V.   a preexisting low level focus or disturbance, and low vertical wind shear.

While these conditions are necessary for tropical cyclone formation, they do not guarantee that a tropical cyclone will form.

Coriolis effect
- The Coriolis effect, which is a result of Earth's rotation, causes moving particles such as air to be deflected to the right in the northern hemisphere and to the left in the southern hemisphere.
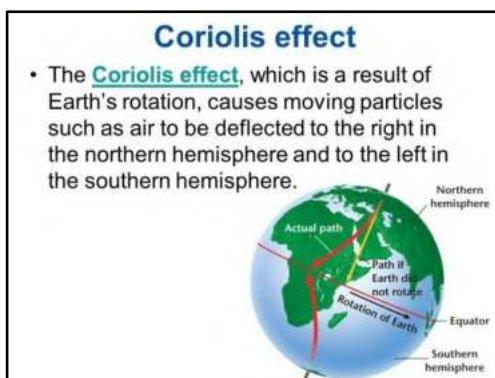
FENI BRIDGE

GS-I   GEOGRAPHY

Context
• Feni bridge connecting **Sabroom in India with Ramgarh in Bangladesh** will be completed by December this year.

Sabroom
• Sabroom is a town in South Tripura located **on the banks of the FeniRiver**, which separates India and Bangladesh.

The Bridge
• The **double laned bridge** is being built in Tripura to access Chittagong port to carry goods and heavy machineries for the northeast region and the rest of India via Bangladesh through the **Chittagong international Port.**
• The Bangladesh government earlier agreed to allow India to use the Chittagong port, about 72 km from Tripura's southern border town of Sabroom.

The only route earlier

After Bridge formation

NH-8
• The National Highway—8, which connects Tripura with rest of India, has been extended up to Sabroom border town.

Construction
• National Highways Infrastructure Development Corporation Ltd of Ministry of Road and Transport highways (GOI) is constructing the Bridge.
• Tripura as a gateway of **India's "Act East Policy"**.
• When completed, the bridge would provide the only land link between India's eastern states and its western states other than through Assam.
• The bridge will also boost the trade across the borders especially with Bangladesh by leaps and bounds.

River Feni
• Feni is a trans-boundary river with an ongoing dispute about water rights.
• It originates in South Tripura, flows through Sabroom town and then enters Bangladesh.
• Muhuri River, also called Little Feni, from Noakhali District (Bangladesh) joins it near its mouth.

SOUTH ASIAN FLOOD GUIDANCE SYSTEM

GS-I   GEOGRAPHY

Context
• Recently, India launched first-of-its kind **Flash Flood Guidance services (FFGS)** for South Asian countries.

Aim
• To issue impact-based **forecasting of flash floods**, which are very sudden and of short duration.
• It forecasts at watershed and also city level forecasts to South Asian Countries: **India, Bangladesh, Bhutan, Nepal and Sri Lanka.**
  o Watershed is defined as any surface area from which runoff resulting from rainfall is collected and drained through a common point. It is synonymous with a drainage basin or catchment area. A watershed may be only a few hectares as in small ponds or hundreds of square kilometres as in rivers.

What are Flash Floods?

- A flash flood is a rapid flooding of low-lying areas: washes, rivers, dry lakes and depressions.
- Flash flooding happens when rain falls so fast that the underlying ground cannot cope, or drain it away fast enough.
- Roads can become like rivers and if there is a lot of water, it can flood buildings and carry cars away.
- So, if the rain is falling too fast for the ground or drains to cope, there is a risk of flash flooding.

HOW FLASH FLOODS OCCUR

1. Heavy rain falls onto waterlogged ground
2. Rainfall cannot soak in so runs down into river
3. River rises dramatically and bursts its banks, flooding valley floor

What causes flash floods?

- It may be caused by heavy rain associated with a **severe thunderstorm, hurricane, tropical storm, or melt water from ice or snow flowing over ice sheets or snowfields**.
- Flash floods are also **caused due to Cloud Burst. eg-** 2010 Leh Flash Flood.
- Flash floods may also occur after the collapse of a natural ice or debris dam, or a human structure such as a man-made dam.
- Flash floods are generally a surprise.
- Flash floods are distinguished from regular floods by having a timescale **of fewer than six hours between rainfall and the onset of flooding.**

Sl No.	CAUSES	PREVENTIVE MEASURES
1	Breaching of river banks	Proper maintenance of river banks, and making retaining walls
2	Inadequate drainage facility	Drainage facility improvement
3	Improper damming	Geo-engineering consideration
4	Sediment pollution, siltation, shallowing of river beds and lakes	Minimizing sediment pollution ,siltation and deepening of river banks & lakes
5	Heavy precipitation in catchment area	?
6	Urbanization	?
7	Changing land-use pattern	Controlling land-use pattern
8	Vanishing of traditional recharging structures and water bodies	Restoring traditional recharging structures and water bodies like ponds, tanks and removing phumdis as far as possible
9	No regulation of flow	Check dams to regulate the flow
10	Deforestation and soil erosion	Aforestation
11	Lack of early warning system	Activation of early warning system
12	Lack of long term action plans for prevention	Making long term plans for prevention

Delving deeper

- Most rivers flow fairly gently as they slope slowly towards the sea. Therefore, when a river floods it does so quite slowly as it takes time for the rain to percolate through the ground and into the rivers and out to sea, allowing time for some warning.
- With flash flooding, **there is often very little time between the rain falling and flash flooding occurring.**
- Flash flooding commonly happens more where rivers are narrow and steep, so they flow more quickly.
- It can also occur from small rivers in built-up urban areas, where hard surfaces such as roads and concrete don't let the water drain away into the ground.
- This leads to surface overflow and can often overwhelm local drainage systems, leading to flash flooding.

Effects of Flash Flood

Primary Effect:
- **Physical damage**- Can range anywhere from bridges, cars, buildings, sewer systems, roadways, canals and any other type of structure
- **Casualties**- People and livestock die due to drowning. It can also lead to epidemics and diseases.

Secondary Effect:
- **Water supplies**- Contamination of water. Clean drinking water becomes scarce
- **Diseases**- Unhygienic conditions. Spread of water-borne diseases
- **Crops and food supplies**- Shortage of food crops can be caused due to loss of entire harves

Territory/Long term Effects
- **Economic**- Economic hardship, due to temporary decline in tourism,
- Rebuilding costs
- Food shortage leading to inflation, etc.

Ways To Prevent and Control Flash Flood

- Flood-control dams are constructed throughout across rivers.
- Dikes and levees are built alongside rivers to keep them from overflowing during periods of high water
- Canals are also used to help drain off extra water. Streams and rivers can be diverted to avoid highly populated areas.
- Regulation of floodplain development and urbanization would reduce flood losses.
- Prevention of soil erosion.
- Plant lots of trees, treat slopes and grads, and create reservoirs to catch sediment and debris.

About FFGS
- The Flash Flood Guidance is a robust system designed by the India Meteorological Department (IMD) to provide the necessary products in real-time.
- It gives **flash flood warnings about 6-12 hours in advance** at the watershed level with resolution of 4km x 4km for the flash flood prone South Asian countries.
- IMD acts as the regional centre covering the countries, providing forecast products, data and training.
- An **automated mode of dissemination** is to be established with the stakeholders along with the use of social media, so that the information reaches disaster management authorities in a timely manner.

Agencies involved
- The South Asia FFGS is funded by the **United States Agency for International Development/Bureau for Humanitarian Assistance (USAID/BHA).**
- It is being implemented by the World Meteorological Organization and the Hydrologic Research Center (HRC).
- National Oceanic and Atmospheric Administration (NOAA) is a satellite data provider into the System.

Significance OF FFGS
- Flash floods and riverine floods cause major loss of life and property in South Asia during the monsoon season.
- Due to the frequency of extreme precipitation, urbanization, land-use changes, the need for early warning systems becomes more important.

USAID
The United States Agency for International Development (USAID) is an **independent agency of the United States federal government** that is primarily responsible for administering civilian foreign aid and development assistance.

WMO
The World Meteorological Organization (WMO) is **a specialized agency of the United Nations** responsible for promoting international cooperation on atmospheric science, climatology, hydrology and geophysics. **Headquarters:** Geneva, Switzerland

National Oceanic and Atmospheric Administration
The National Oceanic and Atmospheric Administration is an **American scientific agency** within the United States Department of Commerce that focuses on the conditions of the oceans, major waterways, and the atmosphere.
NOAA warns of dangerous weather, charts seas, guides the use and protection of ocean and coastal resources and conducts research to provide the understanding and improve stewardship of the environment.

IMD
The India Meteorological Department (IMD) is an agency of the **Ministry of Earth Sciences** of the Government of India. It is the principal agency responsible for meteorological observations, weather forecasting and seismology. IMD is headquartered in Delhi and operates hundreds of observation **stations across India and Antarctica**. IMD is also one of the **six Regional Specialised Meteorological Centres of the World Meteorological Organisation.** It has the responsibility for forecasting, naming and distribution of warnings for tropical cyclones in the Northern Indian Ocean region, including the **Malacca Straits, the Bay of Bengal, the Arabian Sea and the Persian Gulf.**

SITTWE PORT & KALADAN PROJECT

GS-I GEOGRAPHY

Context

- India and Myanmar have agreed to work towards the operationalization of the Sittwe port in the Rakhine state in the first quarter of 2021.

Sittwe Port

- Sittwe Port is a **deepwater port constructed by India** at on Lakadan river mouth, Sittwe, the capital of Rakhine State in Myanmar, on the Bay of Bengal.
- Situated at the **mouth of the Kaladan River**, the port is being financed by India as a part of the **Kaladan Multi-Modal Transit Transport Project.**
- The project is aimed at developing transport infrastructure in southwestern Myanmar and northeastern India.

Kaladan Multi Modal Project

- It is a Multimodal Transit project connecting Kolkata Port with Mizoram via the Sittwe port of Myanmar.

Sea-river-road route

- The project has several sections combining multi-modes of transport.
1. 539 km shipping route from seaport of Kolkata
2. in India to Sittwe seaport in Myanmar via Bay of Bengal.
3. 158 km River boat route from **Sittwe seaport to Paletwa**Inland Water Terminal in Chin Statevia Kaladanriver in Myanmar.
4. Four-lane road route from **Paletwa (IWT) to Zochawchhuah(India)-Zorinpui(Myanmar)** at Indo-Myanmar border.
5. Road route from Indo-Myanmar border at **Zochawchhuah-Zorinpui to Aizawl**, Mizoram.

Note: On the Indian side, work is on to extend the Aizawl-Saiha National Highway(NH-54) by further 90 km to the international border at Zorinpui. This highway from Myanmar border to Aizawl and further to Dabaka, Assam will ensure the faster movement of goods in the entire NE.NH-54 is a part of the larger East-West Corridor connecting North East India with the rest of India.

*Refer Map for better understanding.

Importance of developing alternative routes

- As of now, the only access to NE India is through the **Siliguri Corridor in West Bengal.**
- Siliguri Corridor is a narrow strip of Indian Territory wedged between Nepal and Bangladesh.
- Routing all cargo destined for the northeast through this corridor causes **significant transportation delays and cost overheads.**
- Siliguri Corridor, also known as the Chicken's Neck,is a perennial threat to our security.
- It has **borders with Nepal, Bhutan, Bangladesh**& hence one of the most sensitive strategic vulnerabilities of India. The corridor is prone to criminal activities.
- **Strategically, it is the Achilles heel** in the defence of almost 2,000 km of borders in the NE states with China and Myanmar.
- Also, the new route through Sittwe would significantly lower the cost and distance of movement from Kolkata to Mizoram and beyond.

Significance of Kaladan Project

- The Kaladan multi-modal transit transport project is <u>cornerstone of India-Myanmar economic, commercial and strategic ties.</u>
- Apart from boosting the economy of Myanmar, the project will also make for an <u>alternative route for goods from India's North-East to rest of the country and world.</u>
- It will give sea connectivity and <u>promote economic development</u> in the North-eastern states.
- The Project is also a **part of India's 'Act East policy'** connecting north eastern States and the ASEAN region.
- Furthermore, the project will help India <u>counterbalance China's growing influence in Myanmar</u>.

Kaladan River

- Kaladanis a river **in eastern Mizoram** and in <u>Chin State and Rakhine State of western Myanmar.</u>
- The Kaladan River is **called the Chhimtuipui River in India.**
- It forms the <u>international border between India and Burma.</u>
- **Source:** Mount Zinghmuh, Chin State, Myanmar
- **Tributary –** Tiau River
- **Mouth-**Sittwe, Bay of Bengal
- Kaladan is the fifth largest river in the world to remain completely unfragmented by dams anywhere in its catchment.
- The first four are Fly, Mamberamo and Sepik in New Guinea and the Pechora in Russia.

Rakhine State

- Formerly known as Arakan, Rakhine is a state in Myanmar.
- Capital: Sittwe
- The Arakan Mountains or RakhineYoma separates Rakhine State from central Burma from North to South.
- Part of Delhi Sultanate and Mughal Empire (under Aurangzeb) in the medieval times. It was followed by Mrauk Kingdom period.
- In the **Treaty of Yandabo (1826)**, Burma was forced to cede Arakan to British India.
- In 1948, Arakan became part of the newly independent Union of Burma (later renamed as Myanmar).

Hundreds of thousands of Rohingya have left their ethnic homeland of Rakhine State for the district of Cox's Bazar in Chittagong, Bangladesh.

- The Rohingya conflict is an ongoing conflict in the northern part of Rakhine State (formerly known as Arakan), characterized by sectarian violence between the Rohingya Muslim and Rakhine Buddhist communities.
- Group active: Arakan Rohingya Salvation Army (formerly **Harakah al-Yaqin**).

INDUS SUTURE ZONE   *GS-I GEOGRAPHY*

Context

- The suture zone of the Himalayas or the Indus Suture Zone (ISZ) has been found to be tectonically active.

What is Suture?

- In structural geology, a suture is a "Joining" of separate tectonic units along a major fault zone. These units have different plate tectonic, metamorphic and paleogeographic histories.
- The suture is often represented on the surface by a mountain range**.**

Where is Indus Suture Zone?

- This zone is a tectonic suture <u>in Ladakh</u> across the north margin of the Himalayas which resulted from the <u>collision between the Indian plate and the Eurasian plate</u> around 52 Ma ago.

Earlier understanding

- Conventionally, it was thought that Indus Suture Zone is a locked zone. But now, it has been found to tectonically active.

Current Findings

- Sedimentary beds are tilted and thrust broken.
- The rivers are associated with uplifted terraces.
- Bedrock shows brittle deformation that occurred at much shallower depths.
- These deformed geological features were then dated in the laboratory using a technique called <u>Optically Stimulated Luminescence (OSL).</u>

- **Inference:** Indus Suture Zone (ISZ) has been neo-tectonically active since the last 78000 -- 58000 years and a recent earthquake in 2010 of low magnitude in village Upshi occurred due to a thrust rupture.

What next?

- The new findings could have major implications in terms of earthquake study, prediction, understanding the seismic structure of the mountain chains well as its evolution.
- It could actually alter the previous earthquake study & predictions.

Optically Stimulated Luminescence (OSL)

- Optically stimulated luminescence is a method of determining the age of burial of quartz or feldspar bearing sediments.
- **Principle used:** Crystal lattices of sediments have the ability to store ionizing energy(X,Y). This energyis released as radiation when excited with light. Amount of radiation released helps in determining the age of sediment.

DAM REHABILITATION & IMPROVEMENT PROJECT   *GS-I GEOGRAPHY*

Context

- The Cabinet Committee on Economic Affairs (CCEA) chaired by Prime Minister Narendra Modi has approved the Dam Rehabilitation and Improvement Project (DRIP) Phase-II & Phase-III.

Aim of Project

- The scheme envisages comprehensive rehabilitation of 736 existing dams located across the country.
- The objective of the Project is to improve the safety and operational performance of **selected existing dams** in the territory of the participating states.

Focus

- To mitigate the risks of dam failure and ensure safety of people, riverine ecology and property located downstream of these selected dams.
- This will be through structural as well as non-structural measures.
- It includes: physical rehabilitation, preparation of operation and maintenance manuals, emergency action plans, early warning system, among others.

Highest Dam	Tehri Dam(Uttarakhand)	Height: 260.5 meters River: Bhagirathi
Longest Dam	Hirakud Dam (Odisha)	Length: 25.79 km River: Mahanadi
Oldest Dam	Kallanai Dam(Tamil Nadu)	River: Kaveri 100 BC –100 AD King Karikala Chola

Financial Aid

- By World Bank and AIIB for phase II & III.

Some developments in DRIP Phase- I

- **Dam Health and Rehabilitation Monitoring (DHARMA):** A system to monitor the health of dams, has been developed and being used by 18 states.
- **A seismic hazard analysis information system (SHAISYS)** has also been developed.

Significance

- The programme complements provisions in the **Dam Safety Bill 2019**, by ensuring capacity building of the dam owners as well as the proposed regulators, and also creates necessary protocols for dam safety.
- The development of capacity will ensure better management, operation, and maintenance of all the dams.
- The project is likely to generate employment opportunities for lakhs.

List Of Major Dams in India	State	River
Bhavani Sagar dam	Tamil Nadu	Bhavani
Tungabhadra Dam	Karnataka	Tungabhadra
Rihand Dam	Uttar Pradesh	Rihand
Maithon Dam	Jharkhand	Barakar
Koyna Dam	Maharastra	Koyna
Bisalpur Dam	Rajasthan	Banas
Mettur Dam	Tamil Nadu	Kaveri
Krishnarajasagar Dam	Karnataka	Kaveri
Indira Sagar Dam	Madhya Pradesh	Narmada
Cheruthoni Dam	Kerela	Cheruthoni
Sardar Sarovar Dam	Gujarat	Narmada
NagarjunaSagar Dam	Andhra Pradesh	Krishna
Hirakud Dam	Odisha	Mahanadi
Bhakra Nangal Dam	Punjab	Sutlej
Tehri Dam	Uttarakhand	Bhagirathi

India and Dams

- India **ranks third globally** after China and US, with 5,334 large dams in operation.
- In addition, about 411 dams are under construction. There are also several thousand smaller dams.

- The dams and reservoirs store approximately **300 billion cu mtr of water annually**.

CHALLENGES TO DAM SAFETY

Ageing of Dams	Huge siltation --- Poor water holding capacity design problem
Overtopping	Pipe failure
Gate/ Valve Failure	Foundation deficiency
Insufficient Spillway capacity	Erosion
Cracking	Seepage
Flooding	Structural instability

Erstwhile poor **regulation of dams – depended on individual dam managers only**

Types of dams
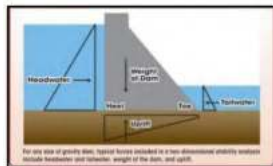
- **Gravity dams**
  - A gravity is a solid concrete structure, generally having a triangular profile, which is so designed that it can safely stand against the precalculated volume of water by virtue of its weight.
  - Forces in the dam : thrust of impounded water in x-axis and weight of the dam in y-axis.

Some examples

- Bhakra Dam is a concrete gravity dam across the Sutlej River, and is in Bilaspur, Himachal Pradesh in northern India.
- India's second tallest at 225.55 m (740 ft) high next to the 261m Tehri Dam.
- The 90 km long reservoir created by the Bhakra Dam is spread over an area of 168.35 km². In terms of storage of water, it withholds the second largest reservoir in India, the first being Indira Sagar Dam in Madhya Pradesh with capacity of 12.22 billion cm3.

Butress dam
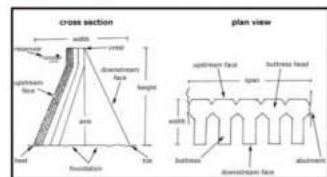
- Butress dams are derived from gravity dams. This type of dams are supported uses thin concrete slab which is supported from downstream side by butresses
- It uses multiple reinforced columns to support the dams. Since it has relatively thin structure so there is considerable amount of saving of concrete material.

- The extraordinary Mir Alam multi-arch dam was completed in 1804 for the water supply of Hyderabad.
- This dam was the work of Henry Russel, a member of the British Royal Engineers. The structure, reaching a height of 12 m, consisted of 21 semicircular, vertical arches that were of constant thicknesses and variable spans.

Arch dams

It is an arch – shaped solid structure made up of concrete which is designed in such a way that a major part of the thrust forces acting on the dam are transmitted to arch.

There are mainly two types of ach dams :
- **Constant radius arch dams** : radius of curvature throughout the structure is constant and upstream face is vertical.
- **Variable radius dams** : curvatures are different on upstream and downstream sides.
  - These types of dames are best suited for narrow valleys.
  - An arch dam having a curvature both in horizontal and vertical alignment is often called a CUPOLA dam.

Embankment dams

- These are non rigid structures which are build over wide valleys with varying foundations. These are trapezoidal in shape and are build of single type of material(such as earth fill or rock fill) or combination of more than one material.
- The main advantage of these dams is that it can be constructed on weak foundation.
- Impervious core is placed in the middle of the embankment body.
- Generally riprap is used to control erosion.

COMPOSITE DAMS

- Composite dams are combinations of one or more dam types.
- Most often a large section of a dam will be either an embankment or gravity dam, with the section responsible for power generation being a buttress or arch.

Cabinet Decision July 17, 2019

Enactment of the Dam Safety Bill, 2019(1/2)

The Union Cabinet has approved the proposal for introduction of Dam Safety Bill, 2019 in the Parliament. The decision will go a long way in meeting the requirements of having uniform dam safety procedures for specified dams in the country. It will impact more than 5600 dams which will now be under the ambit of uniform Dam Safety Regulations.

Benefits:
- The Dam Safety Bill, 2019 addresses all issues concerning dam safety including regular inspection of dams, Emergency Action Plan, comprehensive dam safety review, adequate repair and maintenance funds for dam safety, Instrumentation and Safety Manuals.
- It lays onus of dam safety on the dam owner and provides for penal provisions for commission and omission of certain acts.
- It will help the States and Union Territories of India to adopt uniform dam safety procedures which shall ensure safety of specified dams and safeguard benefits from such dams.
- This shall also help in safeguarding human life, livestock and property.

Cabinet Decision July 17, 2019

Enactment of the Dam Safety Bill, 2019(2/2)

Salient features:
- The Dam Safety Bill, 2019 provides for proper surveillance, inspection, operation and maintenance of all specified dams in the country to ensure their safe functioning.
- A National Committee on Dam Safety will be set up to evolve dam safety policies and recommend necessary regulations as may be required for the purpose.
- The Bill provides for establishment of National Dam Safety Authority as a regulatory body which shall discharge functions to implement the policy, guidelines and standards for dam safety in the country.
- State Committee on Dam Safety will be set up by the State Governments to ensure proper surveillance, inspection, operation and maintenance of all specified dams in that State and ensure their safe functioning.
- It further provides that every State shall establish a "State Dam Safety Organization", which will be manned by officers from the field dam safety preferably from the areas of dam-designs, hydro-mechanical engineering, hydrology, geo-technical investigation, instrumentation and dam-rehabilitation.

Context
- The Centre told the Supreme Court that proceedings of the Delhi Assembly's Peace and Harmony committee, which has summoned Facebook India VP and MD Ajit Mohan to appear as a witness in connection with the north-east Delhi riots, is "without jurisdiction" as the issue pertained to law and order.

Constitutional Provisions
- **Article 105** and **Article 194** grant privileges or advantages to the members of the parliament so that they can **perform their duties or can function properly without any hindrances**. Such privileges are granted as they are **needed for democratic functioning.**
- **Freedom of speech and publication under parliamentary authority**
  - This is defined under **Article 105(1) and clause (2).**
  - It means that **no member of parliament will be liable** in any proceedings before any Court for anything said or any vote given by him in the Parliament or any committee thereof.
  - Also, **no person will be held liable for any publication of any report**, paper, votes or proceedings if the publication is made by the parliament or any authority under it.
  - The same provisions are stated under **Article 194**, in that members of the **legislature of a state are referred instead of members of parliament**.
  - Article 105 is an **absolute privilege** given to the members of the parliament but this privilege can be used in the premises of the parliament and not outside the parliament.
- **Power to make rules**
  - The Parliament has the power, which is given by the Constitution of India, to **make its own rules** but this power is subjected to the provisions of the Constitution.
  - The rules should not be made for its own benefit.
- **Internal independence/autonomy**
  - The houses can deal with their respective issues i**nternally without any interference** of the statutory authority.
  - The **Indian Judiciary might not interfere with the proceedings** or issues dealt in the parliament or by the members in the course of their business.
- **Freedom from being arrested**
  - The Member of Parliament **cannot be arrested 40 days before and 40 days after** the session of the house.
  - If in any case a Member of Parliament is arrested within this period, the concerned person should be **released in order to attend the session freely.**
- **Right to exclude strangers from its proceedings and hold secret sessions**
- **Right to prohibit the publication of its reporters and proceedings**
  - The right has been granted to **remove or delete any part** of the proceedings that took place in the house.
- Right to punish members or outsiders for contempt
  - The houses have the right to punish any person for any contempt made against the houses in the present or in the past.

Breach of Privilege
- While the Constitution has accorded **special privileges and powers to parliamentarians and legislators** to maintain the dignity and authority of the Houses, these powers and privileges are not codified.
- Thus, there are **no clear, notified rules to decide** what constitutes a breach of privilege, and the punishment it attracts.
- Any act that **obstructs or impedes either House** of the state legislature in performing its **functions, or which obstructs or impedes any Member or officer** of such House in the discharge of his duty, or has a tendency, directly or indirectly, to produce such results is treated as breach of privilege.

Punishment for an individual who is found guilty of breaching the legislature's privilege
- If the Committee finds the offender **guilty of breach of privilege and contempt**, it can recommend the punishment.
- The punishment can include **communicating the displeasure of the state legislature** to the offender, **summoning the offender before the House** and giving a warning, and even sending the offender to jail.
- In the case of the media, **press facilities of the state legislature may be withdrawn**, and a public apology may be sought.

Codification of Privileges

- What precisely are the privileges of legislatures and their members and whether, in cases of doubt or conflict between them and others, say the Press, can courts come into the picture is not clear.
- This is primarily because the f**ramers of the Constitution preferred not to define** the privileges but simply equated them with those of the House of Commons.
- The **United Kingdom does not have a written Constitution** and the **powers of Parliament and its members have evolved out of conventions** and centuries-old experience.
- In fact, the wholesale acceptance of the unwritten privileges of the British House of Commons by the Indian Parliament and State legislatures, functioning under a written Constitution which guarantees a set of fundamental rights, like the freedom of speech and expression has of late given rise to **conflict between the legislature and Press or the judiciary for that matter.**
- The **Blitz case (1951),the Searchlight case (1959), Keshav Singh case (1964), Eenadu Editor Ramoji Rao case (1984), K.P. Sunil & Ors case (1992), The Hindu case** (2003) and the recent case of two senior scribes of Kannada tabloids (in which Karnataka House sentenced them to one year jail together with a fine of Rs.10,000 each for writing defamatory articles against legislators), are the **direct result of the confusion born out of non-codification of legislative privileges.**
- The Constitution **clearly envisaged** that the privileges of Parliament and of State legislatures **would be defined** by law and until so defined would be what they were in the case of the House of Commons at the commencement of the Constitution.
- It was probably feared that **codification would expose the actions of legislatures to judicial interference** to such an extent that they will not be able to discharge their functions with requisite dignity and grace.
- However, the absence of such codification could not prevent judicial intervention. The Supreme Court in its advisory opinion in reference case (1965) clearly upheld the **court's competence to examine all privilege related cases and to rectify mistakes resulting from mala fide acts, caprice and arbitrariness**.
- But notwithstanding the apex court's verdict in the **Keshav Singh case**, the scope of legislative privileges **remains unlimited**. Such an unfettered and undefined power is l**iable to be abused** and it has actually been in the past not only used against innocent citizens and others like newsmen but even against legislators themselves.

Way Forward

- The first and second Press Commissions have already stressed the need to define them. The **Press Council of India,** in its second report in 1970 too had made a strong plea for the codification of these privileges.
- The **Constitution itself very clearly contemplates** that the powers, privileges and immunities of the legislatures shall be such as may be **defined by legislation from time to time**, and until so defined, shall be those of the House of Commons.
- Finally, legislators inclined to be overzealous about their privileges must remember that **in India it is the Constitution, not the legislature,** from where all the three organs of the State – the legislature, the executive and the judiciary – **derive their powers, that is supreme**. Also, Lord Denning's observation in this regard is very relevant to remind law-makers this harsh reality on the ground: **"Be you ever so high, the law is above you"**.

CONTEMPT OF COURT   *GS-II POLITY*

Context

- A Division Bench of the Gujarat High Court sentenced Gujarat High Court Advocates' Association (GHAA) president Yatin Oza to a **penalty of Rs 2,000 and punishment** till the rising of the court, after he was found guilty of committing criminal contempt of the court.

Law regarding Contempt of Court in India

- Contempt of court is an **offence of disobedience or disrespect towards a court of law** and its officers in the form of conduct that **opposes or challenges the authority, justice and dignity of the court.**
- **Article 129** of the Indian Constitution of India states "The Supreme Court of India shall be a court of record and shall have all the powers of such a court including the power to punish for contempt of itself".
- **Superior courts of record** have the powers to punish contempt relating to the judges of those courts and the proceedings therein. The principal aim of the jurisdiction is to protect the dignity of the court and the due administration of justice.
- The **Contempt of Court Act, 1971** under Section 2(c) defines and limits the powers of certain courts in punishing contempt of courts.
- Contempt can be **civil as well as criminal** in nature.

- The act defines **civil contempt** as "**willful disobedience** to any judgment, decree, direction, order, writ or other processes of a court or wilful breach of an undertaking given to a court" and criminal contempt as "the publication of any matter or the doing of any other act whatsoever which
  - o scandalizes or tends to scandalize, or lowers or tends to lower the authority of, any court; or
  - o prejudices, or interferes or tends to interfere with, the due course of any judicial proceeding; or
  - o interferes or tends to interfere with, or obstructs or tends to obstruct, the administration of justice in any other manner;"

Necessary ingredients to constitute Contempt of Court in India

- **Interference with Administration of Justice**
  - o In **Brahma Prakash Sharma v State of Uttar Pradesh**, the Supreme Court had held that in order to constitute the offence of Contempt of Court, it was not necessary to specifically prove that an actual interference with administration of justice has been committed.
- **Scandalizing the Court**
  - o In the case of **PN Dua v Shiv Shankar and others**, the Supreme Court held that **mere criticism of the Court does not amount** to contempt of Court.
- **Interference with due course of Justice**
  - o In Pritam **Lal v. The High Court of M.P the Supreme Court** held that to preserve the proceedings of the Courts from interference and to keep the streams of justice pure, **it became the duty of the Court, to punish the contemnor** in order to preserve its dignity.

Need of Contempt of Court

- discipline inside courts
- compliance with court directions and orders
- exclusivity and integrity of the justice system and
- (Maintaining) the prestige and reputation of the judges and the courts.

Issue with Contempt of Court

- The clause against scandalizing the court, for the purpose of maintaining its prestige and reputation, has obvious problems.
- For one, both the clause and the purpose it serves are far **too vague and all-encompassing**.
- Furthermore, this **portion of the law is out of sync with prevailing trends** in society.
- The onus of maintaining the **image and prestige of the courts (and of the judges) must lie primarily with the courts and judges** themselves.
- However, because judges are also human, the only surest guarantee of being able to do so is for the courts and judges to keep themselves open and responsive to criticism.
- It is mere common sense, and a fundamental principle of natural justice, that **no one may be the judge in his or her own case**. However, the contempt law enables just that as it stifles dissent and criticism and the judiciary sits in judgment on itself.

Way Forward

- One may take the **United States and the United Kingdom** as examples of liberal democracies in which there is **no law at all on contempt of court** involving scandalizing the judiciary.
- In the United States **freedom of speech is paramount**, and the **notion of contempt is limited** to "behavior carried out in the direct presence of the courts or so near thereto as to obstruct the administration of justice."
- In the UK, contempt laws currently are restricted to: (i) **Contempt "in the face of the court"** (not to be taken literally; the judge does not need to see it, provided it took place within the court precincts or relates to a case currently before that court); (ii) **Disobedience of a court order;** and (iii) A **breach of undertaking** to the court. There is **no clause on contempt for 'scandalizing the court'** or bringing down its reputation or prestige.
- India, too, would be well served, as an **evolving liberal democracy,** if the clause on scandalizing the court is done away with in our contempt law.

THE RIGHT TO INFORMATION ACT, 2005

GS-II POLITY

Context
* October 12 marks 15 years since the implementation of the Right to Information Act.

Background
* India is considered as the **largest democracy in the world**. The basic feature of every democratic setup is **transparency, openness and accountability**.
* In India, public authorities or administrative authorities have a **wide discretionary power**, so a feeling has arisen in the mind of legislators as well public that this may lead to **misuse of power which will ultimately result in maladministration and corruption**. Therefore, Right To Information has emerged.
* Right to Information implies that the **public can participate in governance** by **accessing the information held by administrative or public authorities** regarding the function discharged by them for the public welfare.
* It is not only a **statutory right but also a fundamental right** of a citizen to know the information related to the public act performed by public authorities.

Need
* Right to information is the need of the current scenario because it **assists to maintain transparency and accountability** in government work.
* It helps to create a situation where the general public can get **details of government action, plans, Yojana, schemes**, etc., which aids to **enhance the responsiveness** of government towards society.
* The remarkable **shift for Indian democracy**, for more access to the information by the citizens.
* It embedded the **right of every citizen of India to have access or control** of the information related to finance to any authority by the state, thereby responsibility arises on the authority to use the information effectively without including into any corrupt activities.
* The Supreme Court of India ruled that every person has a **right to know about expenses and assets against candidates for election**, because these candidates offer the public services with their own desire so that they cannot demand exemption from any of the details related to assets or any charges against them.
* According to the above case, not only candidates but **political parties, worship places, education centers, but even private schools and public companies** fall under this Act.

Features of Right to Information Act, 2005
* Public authorities have a **duty to provide any information** which is claimed by a citizen.
* Public authorities are under the **obligation that they need to circulate the information** to the person who demands the information.
* However, this Act comes with certain **obligations relating to the security of the nation, personal information & other people's information**.
* There is a time limit on the authority to give information **within 30 days**.
* If the authority denies providing any kind of information then the person has the power to go to the **appellate authority**.
* There are **25 organizations which are exempted** from the right to information under the "second schedule" of this Act.
  o These include Central Economic Intelligence Bureau, Intelligence Agencies, etc., certain bodies which basically perform the research work with regard to the country's security, special service bureau, narcotics control board, but RTI Act is not applicable to "Dadra and Nagar Haveli & Lakshadweep".
* Many people who are incapable, **poor or physically disabled get benefits** from this Act.
* RTI helps the administration to take proper action and **adopt a policy which helps the government to reduce corruption** and work effectively.
* Section 8 is defined as **"exemption from disclosure of information"**.
  o Disclosure of the information would prejudicially affect the **sovereignty and integrity of India, the security, strategic, scientific or economic interests of the State**, relation with foreign States or lead to incitement of an offence.
  o The information which has been expressly **forbidden to be published by any court of law** or tribunal or the disclosure of which may constitute contempt of court.
  o Information, the disclosure of which would cause a **breach of privilege of Parliament o**r the State Legislature.
  o Information including **commercial confidence, trade secrets or intellectual property,** the disclosure of which would harm the competitive position of a third party.
  o The information available to a person in his **fiduciary relationship**.

o Information, the disclosure of which would endanger the **life or physical safety of any person** or identify the source of information or assistance given in confidence for law enforcement or security purposes.

o The information which would **impede the process of investigation or apprehension** or prosecution of offenders.

Judgments related to RTI

- **Bennett Coleman vs. Union of India**
  o The Apex Court stated that "Right to information is our fundamental right falls within the purview of **article 19(1) (a) of the Constitution of India**".
- **SP Gupta vs. Union of India**
  o The court observed that "It is a **right of the public to get information regarding public functions performed by the public authorities** and authorize the public to access the information related to public transactions performed within the scope of the public act".

Critical Appraisal of Right To Information Act

The RTI Act makes the right to information as a tool to check upon the misuse of the discretionary power of administrative authorities but it suffers from several drawbacks which weaken the position of the right to information. The drawbacks are as follows:

- **Section 2(h)** defines the term 'public authority' but it **does not give a comprehensive and exclusive definition** of public authorities which might create confusion.
- **Temples** appeared not as public authorities because they were funded by trusts but in many cases, the Supreme Court considered temples as public authorities.
- Another loophole in this Act is **absence of contempt provisions**, this stated that the information commission shall be binding but the provision of 'contempt of court' is absent due to which it cannot force or comply with the public to follow the rules.
- And there is **no penalty upon appellate authority**, the applicant should receive the information requested in the **RTI application within 30 days of receiving such application** and within forty-eight hours in case of life and liberty as per **Section 7(1) of the act**. But if that limit exceeds or in no limitation time period this work is not done then there is no proviso or concept introduced.
- It provides that **servicemen** also become **Central Public Information Officers [CPIO]** even if they **don't have any knowledge about the Act** and work still they are appointed as the additional duty.

Way Forward

- **Training** should be provided to the **fresher persons** and the appellate authority and review them from time to time about the amendment test along with the training should also be conducted so they can get the information and knowledge.
- There are many provisions in RTI Act, which impose obligations, duties responsibilities as well as a penalty upon public officers but **no provision for the appreciation for their hard work**, which create a situation of de-motivation in the mind of public employees.
- The Act also does not provide any kind of **protection to the whistleblower.**
- Right to information exists before the enactment of Right to Information Act, 2005 because it is considered as one of the fundamental rights within the purview of Article 19(1) (a). This right promotes transparency, accountability in function discharge by public authorities. Although Right to information is considered as advancement in India it suffers from several drawbacks which need to be revised and improved.

DIMINISHING ROLE OF PARLIAMENT

GS-II POLITY

Context

- It has been alleged by some scholars that the government's actions are undermining the role of Parliament today.
- On an average, PM has spoken 3.6 times a year in Parliament: 22 times in six years (not more than H D Deve Gowda who was PM for two years).
- In contrast, Atal Bihari Vajpayee spoke 77 times in six years when he was Prime Minister and Manmohan Singh (who was called Maun Mohan Singh by Modi in 2012) spoke 48 times in Parliament during his 10 years in office.

Other events which shows diminishing role of the Parliament

- **Role of Parliamentary Committees**
  o The number of Bills that have been r**eferred to parliamentary committees** — the deliberative core of parliamentary work — **has shrunk dramatically**.

- o From 68 (71 per cent of the total) in the 15th Lok Sabha to 24 (25 percent of the total) in the 16th Lok Sabha — and zero in 2020.
  - o Earlier, parliamentary committees, with a mandate for scrutiny and oversight, **used to amend Bills in an effective manner, and train parliamentarians** in the art of law making.
- **Money Bill**
  - o Several key pieces of legislation have been **passed as Money Bills**, despite the fact that they did not fit this category. Money Bills have to do with **taxation or government spending**.
  - o Several Bills that had little to do with this definition have been passed as Money Bills.
- **Discussion**
  - o **Ordinary Bills are not so much discussed**, either because their **texts are handed over to the MPs at the last minute** or because **there is little time for debates**.
  - o When they are discussed, **amendments of the Opposition are usually rejected** to retain the originally introduced Bill. If debates exist, they are for formality and procedure.
- **Parliament Meeting**
  - o In the 1950-60s, Parliament, the law-making organ of the State, used to meet, on an average, 125-130 days in a year. This has **come down to just 65-70 days in the last decade.** It means that the amount of time for which Parliament sits and deliberates has **declined by almost 50%** between 1960 and 2010. In 2017, the total number of sittings were only 57.
- **Social Inclusion**
  - o The current Lok Sabha consists of 81 MPs - 14.9% of its strength - of SC category against 16.6% of the total population of Scheduled Castes; 49 MPs - 9% - are from Scheduled Tribes, against an ST population of 8.6%; 62 women MPs constitute 11.4% of the Lok Sabha, while women constitute 49% of India's population; there are 23 Muslim MPs - 4.2% of Lok Sabha - while the community makes up 10.5% of the country's population.

Conclusion

- While we can legitimately be proud of the reasonably successful working of Parliament during the last five decades, Parliament is **relevant only as a dynamic institution ever adjusting its functions and procedures** to the changing needs of the times.
- If democracy and freedom are to endure, if representative institutions are to be made impregnable and if the new economic reforms and an all-round effort at liberalization are to bear fruits, it is **essential to restore to Parliament and its Members** their traditional esteem and honor in the affections of the people.
- Reforming the Parliament in essential respects is already a categorical imperative.
- An **integrated approach to political and economic systems reforms** is necessary. No single reform can provide a miracle cure.
- Also, parliamentary reforms cannot be effected in a hurry. We must proceed with care and caution and begin by **setting up a Parliamentary Reforms Commission or a Study of Parliament Group"** outside parliament as was done in U.K. before the procedural reforms.
- Finally, of course, the **Rules committee or a Special Procedure Committee** of the House should report on the matter.
- **Parliamentary reforms, political party reforms, electoral reforms, judicial reforms**, etc., all have to be taken up together in an integrated approach to political and economic reforms and as part of the overall review of the working of our Constitution.
- No single reform can provide a miracle cure and no reforms should be affected in a hurry. We must proceed with utmost care and caution and evolve a national consensus on desirable changes.

NEW ZEALAND'S ASSISTED DYING ACT　　　　　*GS-II POLITY*

Context

- As per preliminary referendum results, a majority of voters in New Zealand have voted in favor of the End of Life Choice Act 2019.

End of Life Choice Act 2019

- The act is meant to **give certain terminally ill** people the **option of requesting medical assistance to end their lives** and to **establish a lawful process** for assisting eligible persons who are able to exercise that option.
- It **lacks oversight and safeguards** and has pointed out issues with the eligibility criteria such as the age limit of 18 years and the **"arbitrary" nature of the 6-month prognosis.**

- Assisted dying means when a **person's doctor or nurse gives them medication** to **relieve their suffering** by bringing on death or when a person **takes the medication themselves**.
- Therefore, the act interprets assisted dying as referring to **both euthanasia and assisted suicide**. While the former refers to the act of deliberately ending a person's life to end their suffering, the latter refers to assisting a person to kill themselves.

Arguments for euthanasia

Some arguments in favor of euthanasia include:

- Human beings should have the **right to be able to decide** when and how they die (self-determination).
- Euthanasia enables a person to **die with dignity and in control of their situation.**
- **Death is a private matter** and the **state should not interfere** with the individual's right to die.
- It is **expensive to keep people alive** when there is **no cure for their illness.** Euthanasia would release precious resources to treat people who could live.
- **Family and friends would be spared the pain** of seeing their loved one suffer a long-drawn-out death.

Arguments against euthanasia

Some non-religious arguments against euthanasia include:

- euthanasia would **weaken society's respect** for the **value and importance of human life**
- proper **palliative care is available** which reduces or removes the need for people to be in pain
- it would lead to **worse care for the terminally ill**
- it would put too much **power in the hands of doctors**, and **damage the trust** between patient and doctor.
- some **people may feel pressured to request euthanasia** by family, friends or doctors, when it isn't what they really want.
- it would **undermine the commitment of doctors** and nurses to save lives.
- it would **discourage the search for new cures** and treatments for the terminally ill.
- some people unexpectedly recover.
- voluntary euthanasia could be the first step on a slippery slope that leads to **involuntary euthanasia,** where those who are undesirable or seen as a problem could be killed.

Indian Scenario Pre Aruna Ramchandra Shanbaug Judgment

- The constitution of India under **article 21 empowers citizens to enjoy the right to life and personal liberty** bringing within its ambit the right to privacy, right of self-determination and right of autonomy.
- The **right to die is a negative right to lif**e and has been the point of debate since decades in Indian judiciary.
- The legal impediments in recognition of right to die are **sections 309 IPC and 306 IPC** containing penal provisions for attempt and abetment to suicide respectively.

Post Aruna Ramchandra Shanbaug Judgment

- The apex court in **Aruna Shahbang case** undertook a **request under article 32 of constitution**. The court insisted that for **passive euthanasia request must be approved by high court since** there is possibility of mischief by relatives and friends for interior motives [
- On March 9, 2018 for recognition of **'right to die' with dignity** the apex court's five judge constitutional bench in supreme court pronounced it as a judgment granting for the first time in India the **legal recognition of 'Advanced Medical Directives' or 'Living Will'**.
- The judgment goes on to argue the streamlining of the process of dying in cases of terminal illness or permanent vegetative state with no hope of recovery. The failure to recognize advanced medical directives may amount to denial of these rights.

Way Forward

- There is dire need to **simplify the procedures** so that it should be practical, operational and without many ifs and buts, though the March '2018 order has paved the way for following a new approach to the concept of Euthanasia.
- For passive euthanasia in **India consent by patient, spouse and children is sufficient** whereas if consented by near relative, friend and or doctor it requires approval from high court until parliament enacts laws.
- Though the judgment March 2018 is not a perfect one on the subject, still it is good beginning to address a new concept which was not touched in the past.

RIGHT TO DISSENT

GS-II POLITY

Context

- The Supreme Court on Shaheen Bagh style protests stated that the **right to dissent is fair and well** but **public spaces cannot be occupied indefinitely** for demonstrations and in such cases the administration ought to take action — that was the.
- Maintaining that **"democracy and dissent go hand in hand"** the Supreme Court ruled that **roads and public spaces can't be blocked indefinitely** and demonstrations expressing dissent have to be in designated places alone.

Dissent and Democracy

- The Preamble to the Constitution of India promises liberty of thought, expression, belief, faith and worship. Clauses (a) to (c) of Article 19(1) promise:-
  o freedom of speech and expression;
  o Freedom to assemble peaceably and without arms;
  o And the freedom to form associations or unions;
- These three freedoms are vehicles through which dissent can be expressed. The right of freedom of opinion and the right of freedom of conscience by themselves include the extremely important right to disagree. The right to disagree, the right to dissent and the right to take another point of view would be here inherently in each and every citizen of the country.

Importance of dissent

- Dissent is essential in a democracy. If a country has to grow in a holistic manner where not only the economic rights but also the civil rights of the citizen are to be protected, dissent and disagreement have to be permitted, and in fact, should be encouraged.
- It is only if there is discussion, disagreement and dialogue that we can arrive at better ways to run the country.
- There can be no democracy without dissent. The blanket labelling of dissent as anti-national or anti-democratic strikes at the heart of our commitment to protect constitutional values and the promotion of deliberative democracy.

Conclusion

- The **Indian people fought hard and long to publicly express their views** on colonial policies and laws, to dissent from them, to shape minds and form public opinion against them, to speak to and against the government, to challenge it.
- People not only signed writ petitions but staged dharnas, held large public meetings, peaceful protests and demonstrations and even, for instance in **Gandhi's satyagraha, launched civil disobedience movements.**
- **None of these are literally found in the Articles** of the Constitution but are **presupposed by it.** That is why the Preamble states that India is a democratic republic.
- The right to protest, to publicly question and force the government to answer, is a fundamental political right of the people that flows directly from a democratic reading of Article 19.

SAME SEX CIVIL UNIONS LAW

Context
- Pope Francis has explicitly voiced his **support for same-sex couples and their right to be legally protected under civil union law**s, marking a radical shift from the Roman Catholic Church's otherwise unwavering stance on homosexual relationships over centuries.
- The remarks were made in a new **documentary called 'Francesco'**.

Vatican on homosexuality and same-sex marriage
- According to the Roman Catholic Church, homosexual people should be **treated with respect and dignity,** but homosexual acts have been **labelled as "intrinsically disordered".**
- In 1976, Pope Paul VI published a **document on 'sexual ethics**' which **outlawed premarital and extra-marital sex** and **strongly condemned homosexuality**.
- A letter published by the Vatican's doctrine office in 1986 described homosexuality as "a more or less strong tendency **ordered toward an intrinsic moral evil;** and thus the inclination itself must be seen as an objective disorder."
- Recognizing such unions, the Vatican claimed, would **not only encourage "deviant behavior",** but also would **suggest an equivalence to marriage**, which according to the church is a union between man and woman.

Bible on Homosexual Relations
- In the Bible, homosexual relations are forbidden in the book of Leviticus. Leviticus 20:13 reads, **"If a man lies with a male as with a woman, both of them have committed an abomination; they shall surely be put to death**."
- In some of his letters, which are included in the Bible, St Paul condemns homosexuality, calling it "unrighteous", and claims that **people who practice it will not inherit the kingdom of God.**

Homosexuality in India
- On 24 August 2017, India's Supreme Court gave the country's LGBT community the **freedom to safely express their sexual orientation**. Therefore, an individual's sexual orientation is protected under the country's Right to Privacy law. However, the Supreme Court did not directly overturn any laws criminalizing same-sex relationships.
- On 6 September 2018, **consensual gay sex was legalized** by India's Supreme Court.
- **Section 377 of the Indian Penal Code (IPC)**, dating back to 1861, makes sexual activities "against the order of nature" punishable by law and carries a life sentence.
- In February 2017, the Ministry of Health and Family Welfare unveiled resource material relating to health issues to be used as a part of a nationwide adolescent peer-education plan called Saathiya. Among other subjects, the material discusses homosexuality.

Way Forward
- The first phase for transgender rights was the **phase of decriminalization.**
  o With Section 377 being decriminalized, the operation of the Telangana Eunuchs Act having been stayed by the Andhra Pradesh High Court13 and Section 36A of the Karnataka Police Act having been amended.
- The second phase of transgender equality would be for **claiming positive rights**.
  o These include the right to marry, the right to reservations in education and employment, the right to adopt and have a family, inherit property, to have access to public services and the right not to be discriminated against.
  o It would also include the **right of transgender persons to be protected from violence** and would need criminal law to be reformed and for coverage of trans persons under legislations to protect them from domestic violence.
  o What is really needed presently is **law reform for protection of transgender persons** so that they can get full recognition as citizens.
  o We need a detailed gender re-assignment legislation which will enable transgender persons to easily change their name and gender as well as get their legal documents to reflect these changes.
- There is also the need for recognition of violence against transgender persons.
  o The criminal law on sexual assault in India presently is still gender specific. It only recognizes **rape and sexual assault where the victim is defend as a 'woman'**.
  o Trans persons are also **not covered under domestic violence protection legislations** such as the Protection of Women from Domestic Violence Act 2006 despite them facing family and intimate partner domestic violence.

FRAGMENTATION OF PHC

GS-II SOCIAL JUSTICE

Background

- One of the crises Indian health services currently grapples with is the varied forms of fragmentation within its institutions both in degree and in intent.
- Fragmentation in health services is defined as focusing and acting on the parts without acknowledging their relation to the evolving whole.
- In the context of financing, fragmentation refers to the existence of a large number of separate funding mechanisms with a wide range of providers paid from different funding pools.
- The transformation of sub-centers into health and wellness centers (HWCs), and the failure to deliver adequate curative care services in the PHCs and CHCs have posed existential questions about these primary healthcare institutions.

Fragmentation in Indian Health Services

- At the central level, the three organs responsible for health in our country were the **Ministry of Health and Family Welfare (MoHFW), the Directorate General of Health Services (DGHS) and the Central Council of Health;** the latter had the mandate to liaison between the center and states on health issues.
- The Central Council of Health had the mandate to **liaison between the center and states** on health issues.
- The DGHS has been the key organization with **technical expertise, competency and official mandate** to implement all activities related to public health, medical education and healthcare by coordinating with the state-level directorates.
- The successful transformation of the NRHM into the **National Health Mission (NHM)** has not only resulted in fragmentation within the health services, but also led to a precedence in the Indian health services of implementing programmes in a flagship or a mission mode by creating temporary institutions and infrastructure as a "model" for successful implementation.
- The **Pradhan Mantri Jan Aarogya Yojana**, under a completely autonomous body named the National Health Authority (NHA).
- The budget allocation on health for the last few years is an indication of how even the financial allocation is fragmented across each flagship programme.
- The danger is that when healthcare delivery systems are **subjected to frequent changes** in a shorter period of time and if these are not in tune with the felt need of the people, then we are **tampering with the "image" of public sector healthcare** among the people, which is an important determinant of their treatment-seeking behavior.

The Way Forward

Transforming CHCs

- Considering the mandate of CHCs, efforts need to be taken to develop them as full-fledged referral hospitals for every 80,000–1, 20,000 population, with at least four specializations: medicine, gynecology, pediatrics and surgery.
- It is not just the shortage of specialists that prevented the strengthening of these centers, but a mismatch and poor infrastructure facilities that resulted in specialists not preferring to work in these settings.
- To start with, the government can aim at having a 10-bedded facility, with the target of attaining 30-bedded hospitals in three phases.

Comprehensive Public Health Services

- The frontline workers are **ASHAs, ANMs, anganwadi workers and MPW** form the cadre of grass root-level public health workers, which is relied upon by the health services for community engagement, public health information and implementation of its interventions.
- It is **important to develop "comprehensive public health" services** at the lowest level, with a coordinated effort of the grass root-level workers and specific roles and responsibilities earmarked for each.
- PHCs are in an **advantageous position to coordinate the activities** of all six sub-centers, whereas the sub-centers in their new avatar (HWCs) can be a satellite center to organize the field-level outreach activities at the community level.
- The existing sub-centers can continue to have an **ANM to manage the facility-based activities like immunizations, deliveries and referral to PHCs**, with at least four public health workers (two males and two females) doing regular outreach activities; the female workers covering MCH and nutrition-related activities and male members covering environmental determinants including water and sanitation, along with lifestyle modifications for chronic disease control. The male members can be from the existing MPWs, and they can be redesignated as public health inspectors with necessary training and two female workers can be redesignated from the ASHA cadre.
- ASHA facilitators who have completed their education level of Class 12 and above and can be **upgraded to the position of junior public health nurse** by introducing specific avenues for promotion and regularisation.

- **Necessary infrastructure** needs to be developed for this under the sub-centres to coordinate all the outreach activities within their **catchment area of 5,000 population**.
- During epidemics and other public health emergencies, these grassroot-level staff can **carry out the task of public health surveillance in the community**, and these can be coordinated by the public health officer, who can integrate with the district epidemiology unit of the Integrated Disease Surveillance Programme.

WOMEN IN THE WORKFORCE

GS-II SOCIAL JUSTICE

Population
- By 2050, India Will Be the Most Populous Country in the World.
- In July 2020, approximately 1,326,093,247 people lived in India.
- By 2050, India's population will increase to an estimated 1.66 billion total people, surpassing China as the world's most populous nation.
- The gender population gap starts at birth. For every 100 boys born nationally, 91 girls are born.
- Women constitute 48.1% of the population.
- As of 2020, there are 50,337,879 fewer women than men across India.6

India's Demographic Skews Young
- India has a large youth population with a median age of 28.7 years old (compared to 38.5 years old in the United States).
- More than one-quarter (26.3%) of India's population is younger than 15 years old.
- Only 6.7% of India's population is older than 65.10

Education
- Women Are Closing the Higher Education Gap14
- Among graduates in 2018-2019, women represented:
  o Undergraduate degrees: 53.0%15
  o MPhil degrees: 69.6%16
  o PhDs: 41.8%17

Labor Force
- The Labor Force Participation Rate for Women Is **Declining**.
- India's economy is growing, with an increasing GDP and a working-age population expected to climb to over 800 million people by 2050.
  o Despite this growth, less than one-quarter (20.3%) of women aged 15 and older participate in the labor force as of 202020 (compared to 76.0% of men).
  o Women account for only 19.9% of the total labor force in India.
- India's low labor force participation rate for women is due in part to **restrictive cultural norms regarding women's work, the gender wage gap, an increase in time spent for women continuing their education, and a lack of safety policies and flexible work offerings.**
- Recent job stagnation and high unemployment rates for women, exacerbated by the Covid-19 pandemic, also keep women out of the labor force.
  o Rural women are leaving India's workforce at a faster rate than urban women.
  o Increasing women's labor force participation by 10 percentage points could add $770 billion to India's GDP by 2025.
- Many Workers in India Are at Risk of Job Displacement Due to **Automation**
  o The **agriculture industry** employs approximately 60% of working women in India but is expected to be heavily impacted by job losses due to automation.
  o **12 million women** may be displaced by automation by 2030. This is equivalent to approximately 10% of women's employment in India.
- Women are **underrepresented** across sectors, including: core, which encompasses infrastructure-related sectors like **oil and gas (7%); automotive (10%); pharmaceutical and healthcare (11%); and information technology (28%).**

Leadership
- The Share of Women-Led Companies in India Has Stagnated.
- Only **3.7% of CEOs and Managing Directors of NSE-listed companies** were women in 2019, a number that has increased just slightly from 3.2% in 2014.
- **8.9% of firms** have women in **top management positions.**

- As of 2019, just **29 companies (5.8%) on the Fortune India 500** list had women in executive roles.
- Women make up only **31% of Chief Human Resources Officers (CHROs)**, a role overrepresented by women in other countries such as the US and South Africa.
- Women account for only **13.8% of board directors from listed companies** in India.
- A Record Number of Women Were Elected to India's Parliament
- In 2019, India elected women to fill 78 of the 542 seats in the lower house of parliament, a record high. However, at only 14.4%, the country remains far from parity.

Pay Gap

- India Has a High Gender Pay Gap
- Based on hourly wages, women earn, on average, **65.5% of what their male colleagues earn for performing the same work**.

Key recommendations

- Extend female quotas to state and national parliaments.
- Further modernize labor laws to ensure equal work opportunities for women.
- Enhance the implementation of gender-related laws.
- Expand secondary and higher education for women and skills training for female entrepreneurs.

Further recommendations

- **Dealing with social and economic barriers to participation**
  - Extend maternity leave and child care for all workers. Raise gradually the compulsory school age to 18.
  - Remove gender biases from school materials to reduce early cultural gender biases.
  - Invest in public transport in urban areas, electricity and water.
  - Reinforce the application of the early marriage prevention law, and expand conditional cash incentive programmes to keep girls in school until 18.
  - Expand vocational and skill training for entrepreneurs.
  - Focus more of these efforts in Northern states with lowest participation.
- **Enhancing access to resources**
  - Remove gender biases from inheritance laws.
  - Improve efficiency of NREGA implementation and enhance active job search for women.
  - Enhance mobile banking and mobile bank branches for female financial inclusion.
  - Ensure that (micro) credit benefits more productive, efficient activities by women by diversifying collateral policies.
- **Enhancing equality of laws and social status**
  - Expand the role of the Ministry of Women and Child Development in promoting cross-cutting aspects of gender equality, including in employment and entrepreneurship.
  - Expand public awareness campaigns on gender equality especially in states with low participation.

NHRC ADVISORY ON SEX WORK		GS-II SOCIAL JUSTICE

Context

- The National Human Rights Commission (NHRC) **recognized sex workers as informal workers** in their advisory issued on Human Rights of Women in the context of COVID 19.

NHRC advisory to sex workers

- NHRC asked the Ministries of Women and Child Development, Labor, Social Justice, Health, and Consumer Affairs in all states and Union Territories to **recognize sex workers as informal workers and register them** so they are able to avail the benefits of a worker.
- The Ministries have been asked to **issue temporary documents** so that the sex workers like all other informal workers, can access all welfare measures and health services.

Importance of Advisory

- The advisory included sex workers among groups that they were considered as part of vulnerable and marginal sections of society, thereby **considering them as citizens who are deserving of protection of human rights** in the time of the pandemic.
- It is an important milestone in achieving **constitutional rights for sex workers**.

Opposition to advisory

- **Immoral Traffic (Prevention) Act**: It lays down that the institution of prostitution is illegal.
- Sex is either a **consensual engagement** between two adults or it is rape.
- Commercial sex, if engaged through any i**nstitutional process is illegal** and liable for prosecution. Hence Government of India never recognized sex work.
- Activist urged NHRC to withdraw Section III (B) of the 'Women at Work' advisory which had practically asked the government to **legalese sex work by giving it a legitimate registration status**.

NHRC

- The National Human Rights Commission (NHRC) of India is a Statutory public body constituted on 12 October 1993 under the **Protection of Human Rights Ordinance of 28 September 1993**.
- It was given a statutory basis by the **Protection of Human Rights Act, 1993 (PHRA)**.
- The NHRC is the National Human Rights Commission of India, responsible for the protection and promotion of human rights, defined by the Act as "**Rights Relating To Life, liberty, equality and dignity** of the individual guaranteed by the Constitution or embodied in the International Covenants and enforceable by courts in India."
- The Protection of Human Rights Act mandates the NHRC to perform the following:
  o Proactively or reactively inquire into violations of human rights by government of India or negligence of such violation by a public servant
  o the protection of human rights and recommend measures for their effective implementation
  o review the factors, including acts of terrorism that inhibit the enjoyment of human rights and recommend appropriate remedial measures
  o to study treaties and other international instruments on human rights and make recommendations for their effective implementation
  o undertake and promote research in the field of human rights
  o to visit jails and study the condition of inmates
  o engage in human rights education among various sections of society and promote awareness of the safeguards available for the protection of these rights through publications, the media, seminars and other available means
  o encourage the efforts of NGOs and institutions congress to work in the field of human rights.
  o it considers the necessity for the protection of human rights.
  o requisitioning any public record or copy thereof from any court or office.

PAKISTAN ON FATF GREY LIST

GS-II INTERNATIONAL RELATIONS

Context
- The Financial Action Task Force (FATF) decided to keep Pakistan in the list of **"Jurisdictions under increased monitoring" or greylist** till the next review of its compliance to the recommendations in February 2021.
- Pakistan has made progress across all action plan items and has now largely addressed 21 of 27 action items.

Background
- Pakistan was placed on the grey list in June 2018 and was given a plan of action to complete by October 2019 or face the risk of being placed on the black list.
- The points on which Pakistan failed to deliver included its
  - lack of action against the charitable organisations or non-profit organisations linked to the terror groups banned by the UN Security Council; and
  - delays in the prosecution of banned individuals and entities **like Lashkar-e-Taiba (LeT) chief Hafiz Saeed and LeT operations chief, Zaki Ur Rahman Lakhvi, as well as Jaish-e- Mohammad chief Masood Azhar.**
- Only Saeed was sentenced for terror financing and Pakistan government claims the others are "untraceable". Queries have been raised on efforts made to trace them.
- Pakistan was found non-compliant in cracking down on terror financing through narcotics and smuggling of mining products including precious stones.
- The FATF process also showed concern about the 4,000 names that were on Pakistan's Schedule-IV list under the Anti-Terrorism Act up to January, but went missing in September 2020.

> **What is FATF?**
> - The FATF is an **inter-governmental body** that is now in its 30th year, working to "set standards and promote effective implementation of legal, regulatory and operational measures for combating money laundering, terrorist financing and other related threats to the integrity of the international financial system".
> - The FATF holds three Plenary meetings in the course of each of its 12-month rotating presidencies.
> - It currently has 39 members, including two regional organisations — the **European Commission and the Gulf Cooperation Council.**
> - India is a member of the FATF consultations and its Asia Pacific Group.

Other countries stand
- **Turkey support**: At the FATF Plenary, Turkey proposed that the members should consider Pakistan's good work and instead of waiting for completion of the remaining six of the 27 parameters, an FATF on-site team should visit Pakistan to finalise its assessment.
- On-site teams are permitted only after jurisdictions complete their Action Plans.
- Normally such a visit is a signal for exit from the grey or black list.
- When the proposal was placed before the 38-member Plenary, no other member seconded the move.
- It was **not** supported by even **China, Malaysia and Saudi Arabia.**
- China and Saudi Arabia had joined India, US and European countries, among others, to send Pakistan a stern message to complete the commitments on terrorist financing and money.

FINANCIAL ACTION TASK FORCE (FATF)

Mechanisms & Structure

WHAT DOES THE FATF DO?
- Sets international standards to combat money laundering and terrorist financing.
- Assesses and monitors compliance with the FATF standards.
- Conducts typologies studies of money laundering and terrorist financing methods, trends and techniques.
- Responds to new and emerging threats.

The FATF currently consists of 37 member States and two regional organisations (European Commission & Gulf Cooperation Council), representing most major financial centres in all parts of the globe.

- FATF Members • Monitored jurisdictions 'Grey list' • High-risk countries 'Black list'

FATF Associate Regional Members:
- Asia-Pacific Group (APG)
- CFATF
- Eurasian Group (EAG)
- ESAAMLG
- GAFILAT
- GIABA
- MENAFATF
- MONEYVAL
- GABAC

FATF Secretariat Paris

Other observer bodies:
- World Bank
- IMF
- OECD
- OSCE
- Asian Dev. Bank
- African Dev. Bank
- European Central Bank
- Egmont Group
- Europol & Interpol
- Eurojust
- UNODC & UNCTED

List of High-Risk 'Non-Cooperative Countries or Territories' ('Black list') & other monitored jurisdictions ('Grey list')

- Democratic People's Republic of Korea
- Iran

Bahamas	Botswana	Cambodia	Ethiopia
Ghana	Pakistan	Panama	Sri Lanka
Syria	Trinidad & Tobago	Tunisia	Yemen

India's stand

- India is a voting member of the FATF and Asia Pacific Group (APG), and co-chair of the Joint Group where it is represented by the Director General of India's Financial Intelligence Unit (FIU).
- Pakistan had asked for India's removal from the group, citing bias and motivated action, but that demand has been rejected.
- India was not part of the group that moved the resolution to greylist Pakistan last year in Paris. The movers were the **US, UK, France, and Germany**; China did not oppose.

What is 'Grey List' and 'Black list"?

- The FATF "greylist" refers to countries that are under "monitored jurisdictions".
- "Blacklist" refers to those facing a "call to action" or severe banking strictures, sanctions and difficulties in accessing loans.

What are the implications of placing a country under grey list?

Why FATF action matters?

- Pakistan faces an estimated annual loss of $10 billion if it stays in the greylist; if blacklisted, its already fragile economy will be dealt a powerful blow.
- Pakistan's $6 billion loan agreement with the International Monetary Fund (IMF) could be threatened.
- The IMF has asked Pakistan to show commitment against money laundering and terror financing.

TAIWAN IN SECURITY OF CHINA / *GS-II   INTERNATIONAL RELATIONS*

Context

- China "firmly oppose" any official exchanges between New Delhi and Taipei.

Why China made this statement?

- India and Taiwan are considering for going forward with talks on a trade deal.
- India and Taiwan in 2018 already signed a bilateral investment agreement and their trade ties have expanded since.
- Taiwanese firms are prominent investors in India, although India and Taiwan do not maintain formal diplomatic relations.
- India is violating **'One-China principle'.**

What is 'One-China principle'?

- "One China principle", it insists both Taiwan and mainland China are inalienable parts of a single "China"
- It is also the political basis for China to develop ties with other countries.

India-Taiwan relations

Current Status

- The bilateral relations between India and Taiwan have improved since the 1990s despite both nations **not maintaining official diplomatic relations.**

Recent Development

- In 2020, two members of the Indian Parliament virtually attended the newly elected President Tsai's swearing in ceremony and praised Taiwanese democracy.
- This move have been termed as a warning message to China and signaling a strengthening of relations between the Tsai and Modi administrations.

Area of consensus

- India has sought to gradually develop better commercial, cultural and scientific co-operation with Taiwan, ruling out the possibility of establishing formal diplomatic relations
- Taiwan has also viewed India's rising geopolitical standing as a counterbalance to the People Republic of China's dominance in the region.
- India's **Act East Policy (AEP)** and Taiwan's **New Southbound Policy (NSP)** aim to increase regional influence and gain political and economic benefits from their partners in the region.
    - The AEP promises to strengthen strategic, economic and diplomatic interactions in Southeast Asia and the Asia-Pacific.
    - NSP aims to enhance cooperation and exchange between Taiwan and 18 countries in Southeast Asia, South Asia and Australia.
- Both sides have aimed to develop ties to **counteract Chinese rivalry** with both nations.

Cultural relations

- The **India-Taipei Association** was established in Taipei in 1995 to promote non-governmental interactions between India and Taiwan, and to facilitate business, tourism, scientific, cultural and people-to-people exchanges.
- The **Taipei Economic and Cultural Centre** in New Delhi is ITA's counterpart organisation in India.

Economic relations

- In 2002, the two sides signed the **Bilateral Investment Promotion & Protection Agreement.**
- They are discussing the possibility of entering into agreements related to Double Taxation Avoidance and ATA Carnet to facilitate participation in each other's trade fairs.
- Both governments have launched efforts to significantly expand bilateral trade and investment, especially in the fields of information technology (IT), energy, telecommunications and electronics.
- Taiwan, as a leading power in the field of **science and technology and semiconductor manufacturing**, is considered a reliable substitute to China.
- In 2019, India - Taiwan trade volume was US$7 billion, growing at a rate of 20% YoY.
- Major Taiwanese exports to India include integrated circuits, machinery and other electronic products.
- India is also keen to attract Taiwanese investment particularly in hi-tech and labour-intensive industries.
- More than 80 Taiwanese companies and entities currently have a presence in India.

Conclusion

- Taiwan, which has a geographically strategic position and shares democratic values is seen as a potential ally for groups like the **Quadrilateral Security Dialogue** (Quad) – a minilateral strategic forum between the U.S., Japan, Australia and India. Both countries must sought to harness their ties.

PRO DEMOCRACY PROTESTS IN THAILAND   /   *GS-II INTERNATIONAL RELATIONS*

Context

- Thailand's government banned gatherings of more than five people on the face of three months of escalating demonstrations that have targeted present King as well as Prime Minister.

What are the protestors demands?

- Anti-government protests emerged last year after courts banned the most vocal party opposing the government of former junta leader Prayuth Chan-ocha.
- Protestors are pushing for Prayuth's removal, reform the monarchy ,a new constitution and an end to the harassment of activists.
- Pro-democracy activists says that the monarchy is too close to the army and thus undermine democracy.
- The government has said it does not target opponents but it is the responsibility of police to uphold the law.

India and Thailand relations

Background

- Diplomatic relations between India and Thailand were established in 1947, soon after India gained independence.

Geographic location

- India shares a long sea border with Thailand as India's Andaman and Nicobar Islands share a maritime border with Thailand along the Andaman Sea.

Areas of consensus

- Thailand and India are cooperating in various multilateral fora like India's dialogue partnership with **ASEAN**, and the East Asia Summit, the sub-regional grouping **BIMSTEC** involving Bangladesh, India, Sri Lanka, Thailand, Myanmar, Nepal and Bhutan, and trilateral transport linkages with Thailand, Myanmar and India.
- India is a member of the **Asia Cooperation Dialogue** (ACD) initiated by Thailand in 2002 and of the **Mekong–Ganga Cooperation (MGC),** a group of six countries.

Cultural relations

- Thailand owes its close trade and diplomatic ties with India to historic, cultural and social reasons.
- India and Thailand have been culturally linked for centuries and India has had a deep influence on Thai culture.
- There are a substantial number of words in Thai that are **borrowed from Sanskrit**, India's classical language.
- **Pali,** which was the language of Magadha and is medium of Theravada, is another important root of Thai vocabulary.
- **Buddhism,** the major religion of Thailand, itself originates from India.
- The Hindu story of **Ramayana** is also well known throughout Thailand in the name Ramakien.

Security and defence relations

- In a major boost to bilateral security cooperation, India and Thailand in 2013 signed an **Extradition Treaty**.
  - The treaty provides the legal framework for seeking extradition of fugitive offenders, including those involved in terrorism, transnational crimes and economic offences among others.
- **Memorandum on Cooperation** in anti money laundering was signed to combat terrorism, organised crime, drug trafficking and counterfeiting.
- India has provided assistance to Thais to **combat Islamic separatists in Southern Thailand** in return for Thai authorities taking action against **Indian separatists** using Thailand as a supply route for arms originating in Cambodia.

Economic relations

- Trade relations between India and Thailand, the **second-largest economy** in the Southeast Asian economic group, ASEAN, has grown by leaps and bounds in the last two years.
- Both Thailand and India have been touted as **beneficiaries of the protracted trade war between the US and China.**
- Major exports from Thailand to India include electronics, machinery, automobile and automobile parts and accessories, jewellery, and rubber products.
- Coming the other way from India are crude oil, chemicals, machinery, jewellery including gold and silver, iron and steel products and food products.
- Latest statistics published by the Indian Embassy in Bangkok, Thailand, shows that trade has been grown some 60 per cent since 2016.
- In ASEAN, Thailand ranks as **India's fifth-largest trading partner** after Singapore, Vietnam, Indonesia and Malaysia.
- Foreign direct investments (FDI) from Thailand into India has also grown significantly from just USD 11.55 million in 2012 to USD 92.22 million in 2018 this is expected to grow strongly.
- These investments have been mostly in infrastructure, real estate, food processing, chemicals and hospitality.

Infrastructure to boost cooperation

- An MOU between the Indian port of **Krishnapatnam located in Andhra Pradesh and Ranong Port in Thailand** was signed.
- This **new maritime route** will be promoted in the Andaman Sea, which will reduce travel time between India and Thailand from 10-15 days to seven.
- The **India–Myanmar–Thailand Trilateral Highway** is a highway under construction under India's Look East policy that will connect Moreh, India with Mae Sot, Thailand via Myanmar.
- The road is expected to boost trade and commerce in the ASEAN–India Free Trade Area, as well as with the rest of Southeast Asia.
- India has also proposed extending the highway to Cambodia, Laos and Vietnam.

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Way forward

- Given Thailand's geostrategic location, economic interests and apprehensions about China it is time that New Delhi seek to cash in on the goodwill it has in Bangkok.
- It is important to promote **Indian soft power** by increasing emphasis on promoting India studies in Thai universities.
- Greater role needs to be given to Indian state governments which have historical connections as well as economic interests in Thailand. For instance,
  - Tamil Nadu is important because of the efforts to connect Dawei Port with Chennai.
  - West Bengal have both historic and economic connections with Thailand.
  - Bihar and Thailand can build close links through Buddhism.
- Indian should also work at strengthening the India-Thailand-Myanmar trilateral as this will yeild benefits for the intersecting bilateral relationships as well.

URANIUM SUPPLY FROM AUSTRALIA TO INDIA / *GS-II   INTERNATIONAL RELATIONS*

Context

- The Department of Atomic Energy (DAE) has turned down the offers submitted by the two Australian companies for commencing supply of uranium ore concentrate citing lack of viability of the proposals.

India-Australia relations

Historical background

- Before independence, Australia and India were **both part of the British Empire**.
- They also share political, economic, security, lingual and sporting ties.
- As a result of British colonisation, **cricket** has emerged as a strong cultural connection between the two nations, as well as the English language.
- Australia has traditionally **supported India's position on Arunachal Pradesh**, which is subject to diplomatic disputes between India and the People's Republic of China.
- **Principle and pragmatism** have been the two pillars on which the two countries have built their partnership.

Areas of cooperation

- Besides both being members of the **Commonwealth of Nations**, both nations are founding members of the **United Nations**, and members of regional organisations including the **Indian Ocean Rim Association for Regional Cooperation and ASEAN Regional forum.**
- India and Australia have a lot in common, as both are **Westminster-style secular, multicultural democracies.**
- The Australian foreign policy blueprint sees healthy relations with India must for **stability**

and openness of the Indian Ocean.

- Both the countries have common interests in upholding international law, especially in relation to freedom of navigation and maritime security.
- Australia's is part of **Quadrilateral Security Dialogue** (Quad) which is a outcome-oriented cooperation for building capacity and improving interoperability in the Indo-Pacific region.
- India's and Australia's share the same vision "**free and open Indo-Pacific**" with a rules-based order and open market economies, along with the freedom of navigation in high seas and over flight.
- Both countries share the same concern about China's expansionist behavior, whether in the South China Sea or along China's land border, especially the ongoing India-China border standoff.

Security cooperation

- In June 2020, India and Australia had elevated their relationship to a '**Comprehensive Strategic Partnership'.**
- They hold the **"Two-Plus-Two" dialogue** meets to discuss vital security issues.
- India and Australia signed **Mutual Logistics Support Agreement** to allows each country to use the other's bases for the refueling and maintenance of aircraft and naval vessels
- Military cooperation between Australia and India includes the regular joint exercise **AUSTRA HIND** (a Special Forces Army Exercise), **AUSINDEX** (a bilateral maritime exercise), **KAKADU** (a multilateral maritime exercise), and **Exercise Pitch Black** (a multilateral air exercise).
- Recently, Australia joined the **Malabar exercise**, which also include the United States and Japan.

Nuclear cooperation

- In 2012, Australian government decided to sell uranium to India despite India not being a signatory to the **nuclear Non Proliferation Treaty**.
- Canberra's overturning of a ban on uranium sales to India was seen as a removal of a diplomatic thorn between the two nations, potentially opening up a new and growing market for Australian suppliers.

The Treaty on the Non-Proliferation of Nuclear Weapons or **Non-Proliferation Treaty**
- It is an international treaty whose objective is **to prevent the spread of nuclear weapons and weapons technology,** to promote cooperation in the peaceful uses of nuclear energy, and to further the goal of achieving nuclear disarmament and general and complete disarmament.
- **India, Israel, Pakistan and South Sudan**, has not joined it.

People-to-people ties

- Growing people-to-people ties, including an increasing Indian diaspora in Australia as well as Indian students choosing Australia for higher education, tourism, sports etc,
- There are already more than 100,000 Indian students who are studying in Australia, more than two-thirds of whom are pursuing higher education.

Economic relations

- India was Australia's first major trading partner with imports through the East India Company, exports from Australia to India dates back to the late 18th century, when coal from Sydney and horses from New South Wales were exported to India.
- Trade is **highly skewed towards Australia**.
- India is Australia's **fifth largest trade partner**, with trade in goods and services worth A$29 billion, representing 3.6 percent of the total Australian trade in 2017-18.
- Australia mainly exports Coal, services (mainly education), vegetables for consumer consumption, gold, copper ores and concentrates, while India's chief exports are refined petroleum, services (professional services such as outsourcing), medicaments, pearls, gems and jewelry.
- India and Australia have established a **$100 million Strategic Research Fund.**

Way Forward

- Australia and India should negotiate to revive the **Comprehensive Economic Cooperation Agreement (CECA)** to improve trade and market access.
- There is need to address the gaps in the educational cooperation between India and Australia and associated issues of attack on Indian students.
- There is also a need to promote and popularize the New Colombo Plan of Australia, which encourages Australian undergraduate students to study in Indo-Pacific countries in general and India in particular.

Context
- Indian Foreign Secretary and Army chief paid two day visit to Myanmar.

Key Takeaways
- A package of 3,000 vials of the antiviral Remdesivir, symbolic of India's commitment to assist Myanmar in its fight against the (Covid-19) pandemic.
- Support for ensuring safe, sustainable and speedy return of Rohingya refugees
- Operationalisation of the crucial Sittwe port in Myanmar's Rakhine state by March 2021
- A liaison office in Nay Pyi Taw.
- Congratulated Myanmar for successfully holding the fourth meeting of the 21st Century Panglong Peace Conference to strengthen constitutionalism and federalism and democratic transition.
- Bust of BalGangadharTilak in Mandalay Jail, and
- A mutual commitment to not allow activities against each other.

India-Myanmar's Relations
"Myanmar is India's gateway to Southeast Asia, India is Myanmar's gateway to South Asia."
Why Myanmar Should Matter to India
- Myanmar is **only country that sits at the intersection of India's "Neighborhood First" policy and "Act East" policy.**
- Myanmar is an **essential element in India's practice of regional diplomacy in the Indo-Pacific**, and serves as a **land bridge to connect South Asia and Southeast Asia.**
- Myanmar is an important member of the **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)**, a multilateral subregional organization that is committed to fostering bilateral or regional cooperation among Bay of Bengal countries.
- To elevate its "**Made in India" arms industry**, India has identified Myanmar as key to increasing its military exports.
- Myanmar is **geopolitically significant** to India as it stands at the center of the India-Southeast Asia geography.
- Myanmar is the only Southeast Asian country that shares a **land border** with northeastern India, stretching some 1,624 kilometers. The neighbors also share a 725-km **maritime boundary** in the Bay of Bengal.

Measures taken to improve ties
- It was one of only two Southeast Asian countries invited to attend the swearing-in of Indian Prime MinisterNarendraModi after he won re-election in May 2019.
- **Facilitating connectivity** is central to improving India-Myanmar economic relations. India regards Myanmar as a gateway to link up to the rest of Southeast Asia, and invested in **ASEAN-wide infrastructural projects** that are able to boost trade in the **ASEAN-India Free Trade Area.**
- **Infrastructure projects**:
  - The **India-Myanmar-Thailand Trilateral Highway and Kaladan Multi-Modal Transit Transport (KMMTT)**, to connect the **eastern Indian seaport of Kolkata with the Sittwe deep-water port in Myanmar's Rakhine state by sea**.
- **Sittwe port**:
- As part of its policy for the **Indian Ocean called Security and Growth for All in the Region (SAGAR),** central to which is **"port-led development**," India developed the **Sittwe port** in Myanmar's Rakhine state.
- This port, which sits on the Bay of Bengal, serves as a critical node of the KMMTT initiative to connect **southwestern Myanmar to northeastern India by creating a multi-modal trinary of sea, river and road transport corridor to boost interconnectivity.**
- India's long-term strategic goal is to create a **Special Economic Zone surrounding the Sittwe port**.
- The Sittwe port is meant to be **India's answer to the Chinese-fronted Kyaukpyu port**, which is intended to cement China's geostrategic footprint in Rakhine**.**

- India has been **providing humanitarian relief** even while deporting Rohingya refugees from India for security reasons, provoking the UN's ire.

Challenges in India-Myanmar relations

- **China Factor:** Beijing's bidding into Myanmar regional affairs. Myanmar is inevitability a "kingmaker" in Sino-Indian relations.
- **Trade deficit:** With a total bilateral trade of $2 billion, India's economic engagement with Myanmar lags behind China. Myanmar is vital to fulfilling India's <u>ambition to become a $5 trillion economy by 2024.</u> India's **withdrawal from Regional Comprehensive Economic Partnership** can further increase this trade gap.

Strengths of India-Myanmar relations

- It is **the only Southeast Asian country** that has a **separate bureaucratic division** (shared with Bangladesh) in India's External Affairs Ministry, testifying to the continued importance of Myanmar to India's current foreign policy.
- **Operation Sunshine 1 and 2:** The Indian and Myanmar armies have carried out two joint military operations, Operation Sunshine 1 and 2, to fight militants along the borders of Myanmar's Rakhine state, which borders the northeastern Indian states of Arunachal Pradesh, Nagaland, Manipur, and Mizoram.
- **IMBAX-2017 and IMBEX 2018-19**: Seeing that Myanmar is critical to its national security interests, India provides military training and conducts joint military exercises with the Myanmar Army like the India-Myanmar Bilateral Military Exercise (IMBAX-2017 and IMBEX 2018-19), by which India had trained the Myanmar Army to be able to participate in UN Peacekeeping Operations.
- **Defense Cooperation Agreement**: To deepen their defense relations, India and Myanmar signed a landmark defense cooperation agreement in July 2019.
- **IMNEX-18:** Realizing the growing importance of the Bay of Bengal, the navies of both India and Myanmar conducted a historic bilateral naval exercise, IMNEX-18, in 2018. India also invited the Myanmar Army to participate in the India-led multilateral **Milan naval exercise** that occurs biennially in the Andaman and Nicobar Islands.
- **Military purchases:** Myanmar bought India's first locally-produced anti-submarine torpedo, called TAL Shyena, a diesel-electric Kilo-class submarine, INS Sindhuvir.
- **Cultural diplomacy: "Buddhist Circuit" initiative,** which seeks to double foreign tourist arrivals and revenue by connecting ancient Buddhist heritage sites across different states in India, should resonate with Buddhist-majority Myanmar.

Way forward

- **Security Cooperation**: For **economic relations to improve**, India and Myanmar must boost their security cooperation at the border. The <u>more secure the border is, the greater the economic activity will be.</u>
- **For example**: Part of the reason why the KMMTT has faced delays is that the route of the project traverses a warzone in Rakhine state, where a battle rages on between the Myanmar Army and the Arakan Army rebels on the one hand, and on the other, the Arakan Rohingya Salvation Army. Insurgents from India's Nagaland have also disrupted the completion of the KMMTT project.
- **Handling Rohingya issue with care:** Myanmar's geostrategic importance to India has meant that Delhi did not take a hardline approach on Naypyidaw vis-à-vis the Rohingya issue, even keeping its distance when Myanmar was hauled into the International Court of Justice over accusations of Rohingya genocide.
- India, which has a Hindu majority, will need **to perform a balancing act between Muslim-majority Bangladesh and Buddhist-majority Myanmar as far as the Rohingya issue is concerned.** The quicker the Rohingya issue is resolved, the easier it will be for India to manage its relations with Myanmar and Bangladesh, focusing instead more on bilateral and sub regional economic cooperation.
- **India's Buddhist diplomacy** would bolster its tourist industry and could build up India's diplomatic reservoir of goodwill and trust with Buddhist-majority countries such as Myanmar.

Conclusion

- Potential in India-Myanmar relations has to be prioritized by both countries, and bilateral commitments translated should bear some practical outcomes.
- However, the responsibility remains on India as to how far and deep it is prepared to nurture its relations with Myanmar, knowing full well that Naypyidaw will matter much to Delhi in the next decade, not least if India wants to augment its **standing as a regional power in the Indo-Pacific.**
- India-Myanmar ties are on the **cusp of a remarkable transformation**. The moment is opportune and the atmosphere is conducive for the governments of India and Myanmar to **intensify efforts toward making India-Myanmar relations profoundly significant in each other's foreign policy.**

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ROLE OF FOOD PROCESSING INDUSTRY IN INDIAN ECONOMY

GS-III ECONOMY

Context

- High fluctuation seen in prices of some of the crops has brought the importance of focusing on the food processing industry again into the limelight.

Background

- Food processing industry has emerged as a vital part of Indian economy both in **generating GDP and employment** in the past few years.
- According to the latest available data, the Indian **food processing industry accounts for 32% of the country's total food market** and is **ranked 5th in terms of production, consumption, export** and expected growth.
- Apart from this, **13% of India's exports and 6% of total industrial investment** accrues to the food processing industry only.
- During FY11-16, India's exports of processed food and related products **grew at a CAGR of 11.74%**, reaching US$ 16.2 billion.
- Moreover, if we will talk about investment, then according to the data provided by the Department of Industrial Policies and Promotion (DIPP), this industry has received around **US$ 7.54 billion worth of FDI during the period April 2000-March 2017**.
- According to the estimates of the Confederation of Indian Industry (CII), the food processing sector has the potential to **attract as much as US$ 33billion of investment over the next 10 years**.
- According to the **ASSOCHAM-Grant Thorton** joint study on **"Food Retail: Investment: Infrastructure",** this sector is expected to generate about **8,000 direct & 80,000 indirect jobs by 2024**.
- Moreover, food processing is a **major segment of the unorganized sector**, accruing around **42% of its total share**.

Advantageous Front for India

One of the best things about the food industry is the fact that India has a favorable position on many fronts. Following are some of those positions that India holds worldwide:

- India is the world's **2nd largest producer of fruits and vegetables**. The processing in this sector is expected to grow by 25% of the total produce by 2025.
- India is the **largest producer of milk in the world**.
- India is the **largest producer of buffalo meat** and **2nd largest producer of goat meat**. Apart from this, India is also 2nd largest producer of eggs and 3rd largest producer of broiler meat.
- India has the **2nd largest arable land** in the world.
- India produces more than **200 million tonne of different food grains** every year.

Apart from these advantages, India also benefits from few other advantages that are only going to prosper its growth opportunities in future. These include:

- **Demand for processed food** is increasing with an increase in disposable income. **Household consumption is set to be double** by 2020 i.e., to reach US$ 3.6 trillion from US$ 1.46 trillion in 2015.
- **Strategic geographic location & proximity to food importing nations** favor India in terms of exporting processed foods.
- Apart from this, continuous **increase in raw material production** helps India to supply cheaper products to other countries.

Challenges for India

Although this sector is having a lot of potential, besides that there are several challenges that are hindering its growth level. Some of the major ones are:

- When it comes to infrastructure, this sector lacks cold chain infrastructure, proper government certified labs and proper mechanized handling.
- With the increasing demand, it's important to match the required level. But unfortunately, not the same has been observed in this sector. **Demand based innovations were not observed** in this sector lacking it to create further growth opportunities.
- The s**kill sets required at different levels** in food processing industry are inadequate. **No proper training** infrastructure is made available that will help enhance employment level in this sector.
- This sector **lacks proper marketing networks** both nationally and internationally. With inefficient and unreliable marketing networks, it's difficult for this sector to aware the public about their products.
- This sector also **lacks proper access to credit**. Being a **capital-intensive sector,** this sector requires funds at cheap

credit rates.

- The **non-availability of working capital at affordable interest** rate makes it difficult for the people engaged in it to carry out their business Properly.

Steps taken by the government

- In order to enhance the efficiency of this sector and in order to help this sector to further support a higher level of employment, several initiatives have been launched by the government. Some of the major ones are:
- Export earnings have been **exempted from corporate taxes.** Apart from this, **100% export oriented units allowed to sell up to 50%** of their produce in the domestic market. Moreover, import duty has been scrapped on capital goods & raw materials for 100% export oriented units.
- A scheme based on **cluster approach** was initiated which helped in creating a well-defined agri/horticultural processing zone with better **support of infrastructure & well established supply chain**.
- This sector has been assigned priority status for b**ank credit**. Apart from this, **60 Agri Export Zones** have been set up across the country.
- **Investment linked tax incentive of 100% d**eduction of capital expenditure for setting up & operating cold chain facilities & warehouse facilities has been offered by the government.
- Programme named '**SAMPADA'** with an allocation of Rs 6,000 crore has been approved.
  - It is expected to leverage investment of Rs 31,400 crore, handling 334 lakh MT agro produce which will benefit 20 lakh farmers and generate 5,30,500 direct/indirect employment in the country by 2020.
- The government has also set up a **Special Fund of Rs 2,000 crore in NABARD** to make available affordable credit at concessional rate of interest to designated food parks and agro-processing units in the designated food parks.
- Government also implemented the **scheme of Mega Food Parks in order to set up modern food processing units** along with a well-established supply chain.
  - Based on the latest data available, so far 41 Mega food parks have been sanctioned, out of which 9 have been operationalized, with 3 more to be operationalized soon.

Comparative Analysis with other countries

- India ranks **second after China in the world in terms of largest food producer**.
- There are several aspects related to this industry when compared worldwide. Some are positively enhancing its level of growth and the employment level it supports and some are negative hindering its level of growth.

Positive aspects

- The Indian food & grocery market is the **world's sixth largest.** Under this retail alone contributes 7**0% of the total sales**. On an average India spends 31% of their total earnings on food & grocery as compared to 9% in US, 17% in Brazil & 25% in China.
- With **growing awareness, and health consciousness**, the demand for processed food is increasing not only domestically but globally as well.
- According to the government's estimates, Indian exports of processed food and related items rose at a compound annual growth rate of 11.74% during 2011-16.
- India also has an upper hand in terms of having a **cheap workforce as compared to other developing economies**.
- This can be effectively utilized to set up a **low production base for both domestic and export markets. Production costs are estimated to be lower on an average** about 40% in comparison to most of the developed and developing countries.

Negative aspects

- Although India is having a **strong agricultural production base**, a significant amount is still wasted due to inadequate infrastructure such as **storage facilities, transportation, cold-chain & packaging facilities.**
- According to the data available with the Ministry of Food Processing Industry, **post-harvest losses account for US$ 1.5 billion annually.**
- When compared globally, **India accounts for less than 10% of the total food produced** into value added products. Whereas the **US accounts for 65%, China 23%, Thailand 30%, Philippines 78% & Brazil 70% in this respect**.

Conclusion

- Food industry is one of the major industries that is **gaining popularity worldwide**. India having an **upper hand in the production** of many food commodities is enhancing its food processing industry year by year.
- Food processing industry has **emerged as one of the growth drivers of Indian economy** by not only contributing high share in GDP but also in delivering a higher level of employment.

- Although like all other sectors it **suffers from few bottlenecks**, but with more and more policies coming in this respect these issues will be scratched out soon. With proper initiatives and policy framework, this **sector will be able to enhance further opportunities of growth and employment** in all other sectors interrelated to it.

ROLE OF ARTIFICIAL INTELLIGENCE IN INDIAN ECONOMY

GS-III ECONOMY

Context
- The RAISE 2020 summit (Responsible AI for Social Empowerment) has brought issues around artificial intelligence (AI) to the center of policy discussions.

Background
- With the **growing trend of 'Artificial Intelligence' globally,** its graph is showing an upward trend in Indian economy as well.
- With a move towards **digitization**, AI has acquired a bit higher position for providing a better future. This better future is not only including **better techniques and tools that will help the economy** to operate efficiently, but also opportunities for employment ensuring a better livelihood.
- According to a report of **FICCI and Nasscom with EY**, AI will create **2.3 million new jobs while eliminating only 1.8 million jobs in 2020**.

Effect on Indian Economy
- According to a report published by one of the renowned firms 'Accenture', the AI sector in India has the potential to add US$957 billion to India's economy in 2035.
    - They have done a comparative analysis among the G20 nations. Based on that analysis, they stated that **India remains the most competitive in South Asia**.
    - Beside this, they also stated that AI is expected to raise **India's annual growth rate by 1.3% in a scenario of intelligent machines and humans working together to solve the country's e most difficult problems in 2035**.

Challenges
Although the figures of employment status for year 2020 seems very plausible to us. But, in order to achieve these figures, there are several challenges that need to be eliminated. Some of the major ones are:
- The major challenge that stands forth the government is the fact that **AI-based applications have been driven largely by the private sector** and have been **focused majorly on consumer goods** only. So, in order to maximize the scale of AI in our country it's important to lay down effective policies keeping these things in mind.
- The e**ducation system** prevailing in our economy does not support the required work environment for AI based applications. As the **nature of jobs are shifting rapidly**, it's important to keep **our education system updated accordingly.**
- Access to **AI-led technology** is likely to be heavily differentiated. AI-based technology is most likely adopted by **organized sector only** and as the industries in organized sector are mostly capital intensive than labor intensive, it is **unlikely on its part to contribute to large scale employment.**
- Moreover, it is also **unlikely in the short or medium term that the unorganized sector will adopt AI** technologies, which engages more than 80% of India's labor force, strengthening the former statement. So, it's important for the government to formulate such policy measures that will **remedy this differentiation so created in the AI field.**
- AI-based industries **operate with a factor of risk** as they are not sure of whether the product they are producing will be a success or a failure. Due to the presence of this uncertain factor, **investors hesitate to invest in such projects**.

Recommendations
Looking at the current scenario of AI in our economy and based on various studies in this respect, various recommendations have been suggested from time to time. Some of the major ones that need to be highlighted in this context are the following ones:
- Policymakers should make **AI a critical component of various initiatives** and programs launched by Prime Minister Modi such as **Make in India, Skill India and Digital India.** This can be done by offering **incentives for manufacturers, students and start-ups to innovate.**
- The **National Education policy must be transformed radically** to suit the change that is expected in this industry in future.
- As **only the private sector is majorly operating in this sector**, which clearly shows a huge capacity that is available which can be efficiently utilized by the public sector. Moreover, the **government can also provide aid by investing for**

businesses that find it difficult to attract funds from outside.

- India should come up with policies that will view **machine intelligence as a critical element** of its national security strategy and should also take incentive in evaluating models of defense research in collaboration with various universities involved in the field of innovation.
- The AI sector requires a **different set of skills and capabilities** in order to carry out their operations. In order to upgrade its citizens with the required skill set, it's important for the government to initiate appropriate policy measures that will help to train the citizens of our country accordingly.

Conclusion

- As the whole globe is entering into a **new phase of technology,** it's important for our country to keep innovating and upgrade its technology in every sector accordingly.
- Artificial Intelligence is one such field that contains a **lot of opportunity and good fortune** if India is capable to **utilize all the potentials** from it and at the same time it contains a bad fortune in case it's not able to match the technology level required by the prevailing competition level.
- So, it's important to take c**orrective measures and initiate policies that are required by this sector.** Looking at the current challenges that this sector is facing, a lot of efforts are required from the government front.

CHALLENGE OF POVERTY IN INDIA   GS-III   ECONOMY

Context

- In a new report on the status of poverty reduction efforts, the World Bank said extreme poverty has been declining steady for the 25 years that it has been formally tracking the trends.
- The agency predicted, however, that the increase in poverty between 2019 and 2020 will be the largest it has recorded, partly due to the COVID-19 pandemic, the newest threat. Other persistent factors include conflict and climate change.

Background

It's been 70 years since we gained independence and since then, a lot of poverty alleviation schemes have been adopted by different governments being elected time to time. But, in order to reduce poverty, each government needed to find out the exact poverty line and persons that lie below that poverty line. Since then, who is poor and where the poverty line lies has been a subject of intense debate. Several working groups and committees has been formed to define a threshold level for measuring poverty in our country. Some of them are as follows:

- In 1962, a **Planning Commission working group** set the poverty line at a monthly income of Rs 100-125 for a family of five at 1960-61 prices.
- In 1971, economists **V.N. Dandekar and N. Rath** first suggested that poverty should be measured not by income, but by calorie consumption, and all those with intake of less than 2,250 calories a day should be classified as poor.
- In 1979, the Planning Commission instituted the **Y.K. Alagh Committee** set the poverty line at 2,400 calories a day in rural areas and 2,100 in urban areas. Minimum per capita monthly income to enable such consumption was set at Rs 49.10 for rural areas and Rs 56.70 for urban areas.
- In 1993, the Planning Commission set up the **D.T. Lakdawala Committee,** which made key changes in the method of determining consumption expenditure and thereby poverty, as a result of which the population below the poverty line almost doubled to 37.3 per cent in rural areas and 32.4 per cent in urban areas.
- The **Lakdawala formula**, applied for 2004/05 yielded the poverty estimate of 28.3 per cent in rural areas and 27.5 per cent in urban ones.
- In 2011, the S**uresh Tendulkar Committee** constituted by the Planning Commission suggested going beyond food to add expenses on education, health, transport and electricity to consumption expenditure. At 2004/05 prices, it set the poverty line at Rs 27 per day in rural areas and Rs 33 in urban ones. Its estimate became controversial as it increased the BPL population in rural areas to 41.80 per cent, though urban poverty remained the same as calculated by the Lakdawala formula.
- Using the **Tendulkar Committee methodology**, the BPL population in 2011/12 was estimated at 25.7 per cent in rural areas and 13.7 per cent in urban ones.
- But yet another Planning Commission committee, headed by **C. Rangarajan,** which submitted its report in 2014, estimated the overall BPL population much higher at 30 percent for 2011/12. It posited a minimum cost of living at Rs 32 a day in rural areas and Rs 47 a day in urban ones.
- Last October, a **World Bank report set a global poverty line of $1.90** a day in purchasing power parity terms. It said, depending on the methodology used, **India's BPL population in 2012 was either 21.2 percent or 12.4 percent.**

Poverty Alleviation Programmes

Some of the major policies launched by government are as follows:

- **Pradhan Mantri Jan Dhan Yojana (PMJDY):** PMJDY was launched by Prime Minister Narendra Modi on 28 August, 2014, with the aim of increasing financial inclusion by ensuring access to financial services such as availability of savings bank account to every individual in the country, access to need based credit, remittances facility, insurance and pension to the excluded sections i.e., weaker sections & low income groups. In addition, the beneficiaries will get RuPay Debit card having inbuilt accident insurance cover of Rs. 1 Lakh.
- **Pradhan Mantri Ujjwal Yojana (PMUY):** PMUY launched by Prime Minister Narendra Modi on 01 May, 2016 at Ballia, Uttar Pradesh, aims to safeguard the health of women and children by providing them with the clean fuel- LPG. Under this scheme, 5 Cr LPG connections will be provided to BPL families with a support of Rs. 1600 per connection in the next 3 years and to ensure women's empowerment, the connections will be issued in the name of women of the households.
- **Direct Benefit Transfer (DBT):** DBT was launched on 01 January, 2013, with the aim to ensure that benefits go to individuals' bank accounts electronically thereby reducing delay in payments, ensuring accurate targeting of the beneficiary and curbing pilferage and duplication. It initiated in 43 districts and identified 27 schemes under it, and later on 78 more districts were added pertaining to scholarships, women, child and labour welfare.
- **Pradhan Mantri Mudra Yojana (PMMY):** PMMY was launched by PM Narendra Modi on 08 April, 2015 which aims at developing and refinancing activities related to micro units. It has been categorized into three portions depending upon the amount of loan being sanctioned, namely, Shishu (loan up to Rs. 50,000), Kishore (loan ranging from Rs. 50,000 to Rs. 5 lakhs), & Tarun (loan ranging from Rs. 5 lakhs to Rs. 10 lakhs).
- **Pradhan Mantri Jan Aaushadhi Yojana:** This scheme was launched by the government to provide quality generic medicines at affordable prices to all, especially the poor, throughout the country, through outlets known as Jan Aushadhi Stores.

Issue in current policies

There are various deficiencies in these policies that are hindering in their process of working. Some of the major ones are stated below:

- Since the date of launch of **Pradhan Mantri Jan Dhan Yojana** till today, on an average **27 crore bank accounts have been opened** out of which most of the accounts accrue to the rural households and a smaller portion to urban households.
  - o The question which arises here is that, whether this amount shows the true picture. According to a report published by Microsave (a financial services firm), **33% accounts are re-opened i.e., suffers duplication.**
  - o Moreover, **28% of the accounts opened under PMJDY are dormant** and **28.88% are zero** and nil balance accounts. The reason for dormancy can be attributed to **lack of information on operational procedures, product features and opening of duplicate accounts.** This shows a huge gap between the picture depicted and reality.
- Under Pradhan Mantri Ujjwal Yojana, the government assured to provide 5 Cr LPG connections to BPL families with a support of Rs. 1600 per connection for the next 3 years of launch. Persons or households that suffer from at least one deprivation under SocioEconomic Caste Census-2011 (Rural) database can avail this benefit.
  - o But according to the SECC 2011, **persons accruing to this category are 8.69 Cr implying that almost 3 Cr people will be excluded** from availing this benefit. Moreover, as revealed by the official website of PMUY **almost 10 Cr Households are deprived of LPG facility.** This itself shows that a large share of the population deprived of LPG is ignored by this policy.
  - o Moreover, according to the CEEW study estimates, the **richest 15% of the population account for about 25% of LPG consumer base**. Despite much of the hyped campaign **"Give It Up"** only 3.6% of consumers actually gave **up** their subsidy claim. Instead of launching it as a voluntary campaign, the government could have enforced it, in order to cover the remaining uncovered BPL families under PMUY.
- With the launch of **Mudra Loan**, the government has created trouble for its own policy PMJDY. Analysis has revealed that the flagship product offered under **PMJDY**, i.e., overdraft facility, is facing **severe competition from Mudra loan,** given the **huge difference between the loan sizes** of the two schemes.
  - o Moreover, **miscommunication about overdraft being free money** and not a transaction history based credit facility, has deterred PMJDY going to an upper level.
  - o NABARD (provide credit support and services to rural and farming segment) & SIDBI (provide credit to small and medium businesses) are the two refinancing agencies that were set up in July 1982 and April 1990 respectively.
  - o But unfortunately, these benefit schemes were not successful in fulfilling their objectives. So instead of opening a new re-financing agency, a step could have been taken in **restructuring the existing ones and broadening the scope of these agencies.** The issue doesn't lie in a shortage of re-financing agencies; it lies in the huge inconsistencies in these agencies. Unfortunately, nothing has been done to address these issues.
- Successful implementation of DBT depends on the **effective banking network.** In this system, **subsidies are transferred directly to the beneficiaries'** bank account implying that the system cannot work if the beneficiary is not having a bank

account. With PMJDY notwithstanding, **banking facilities among poors is still quite limited**. With an ineffective and reluctant banking system in rural areas, it creates trouble for poors in opening bank accounts for availing their granted subsidies.

- **Pradhan Mantri Jan Aaushadhi Yojana** (PMJAY) was actually launched in 2008 as Jan Aaushadhi scheme under UPA government. It has been renamed as PMJAY government. Between 2008 and 2015, only 99 JAs were actually functional. Although the number rose to 1235 by March 2017, but still **fell way short then the target of 3000 JAs.**
  - o Moreover, the **drugs available between 2008-2015 periods were 40-100 instead of the target of 200 drugs**. This number has also shown an upward trend by reaching beyond 700 levels but still some of the outlets still couldn't cross the level of 200 drugs.

NITI AAYOG'S Report on Poverty Alleviation

As per the report, NITI AAYOG claims that **India will be $10 trillion economy by 2032**, and there will be **no family below the poverty line.** The strategy that has been adopted by this task force lies on two pillars, namely, sustained rapid growth that is also employment intensive and making anti-poverty programs effective.

First pillar

- It includes raising **productivity in the agricultural sector,** as poors predominantly reside in rural areas.
- It also recommends a s**econd green revolution in rain fed areas** in general and eastern regions in particular.
- Due to sluggish growth in the agricultural sector, it also recommends **growth in organized labor intensive sectors such as apparel, footwear, food processing** etc.
- It also recommends creation of a handful of **Coastal Economic Zones (CEZs)** that can provide the focal point for the location of employment-intensive industries allowing them to exploit the economies of scale and agglomeration.

Second Pillar

- It focuses on making various poverty alleviation programmes MGNREGA, PDS, Midday meal scheme & Housing for all more effective.
- It also assigns a major role to (JAM) trinity i.e., Jan Dhan Yojana, Aadhar & Mobile in reducing poverty in the country.
- It also recommends that each gram panchayat may be asked to identify five poorest families in the village and endeavor to lift them out of poverty. But, given the situation of very poor villages where almost the whole village suffers from poverty, it will be difficult to address only 5 households from it.

Unless and until, Governments won't learn from their past mistakes & from other better doing economies and if won't take more effective steps depending upon the socio-economic condition of the country, it's hard to achieve the goal of zero poverty for India by the end of 2030.

THE ECONOMICS OF AUCTIONS

GS-III ECONOMY

Context

- The Economics Prize in Memory of Nobel has gone to **Paul Milgrom and Robert Wilson** for their work on **auction theory and new auction formats**.

Auction Theory

- Auction theory studies **how auctions are designed, what rules govern them**, how bidders behave and what outcomes are achieved.
- This simple design of an auction — the **highest open bidder getting the property** (or the commodity in question) — is intuitively appealing as well.
- But over time, and especially over the last three decades, more and more goods and services have been brought under auction. The **nature of these commodities differs sharply.**
- For instance, a bankrupt person's property is starkly

THE AUCTION WINNER'S CURSE

10 20 50

- ESTIMATE
+ MEAN ESTIMATE
- REAL VALUE

WINNER'S CURSE
YES! NO?

PRICE

The most optimistic bidder often overestimates the common value of an auctioned object, so that 'winning' the auction turns out to cause a loss — the winner's curse.

Johan Jarnestad/The Royal Swedish Academy of Sciences

different from the **spectrum for radio or telecom use.**

- Similarly, **carbon dioxide emission credits** are quite different from the spot market for buying electricity, which, in turn, is quite different from choosing which company should get the right to collect the local garbage.

- This is also true because the purpose of an auction also differs with the commodity and the **entity conducting the auction**.

The auction winner' curse

- When selling telecom spectrum, a government could either think in terms of maximizing its revenues or aim at making telecom more affordable to everyone.

- If it wants to maximize revenues, the auction has to be designed one way, but doing so will imply that the company eventually winning the contract will make telecom services costlier and, in the process, deprive the poorest sections of affordable telephony and Internet access.

- The up-side, however, is that the government will get more money in its kitty and can use it whichever way it likes — possibly even subsidies the telecom costs of the poorest.

- On the other hand, if the government's goal is to enable the broader society to access the benefits of the telecom revolution and allow even the poorest to use the Internet at an affordable rate, it may want to focus more on how best a company can ensure that.

- In fact, before auctions became the norm for limited resources such as radio waves, governments used to allocate them as one would conduct a beauty contest. This would involve asking how a company might use the spectrum and assessing which company is best suited to receive the license. This approach, however, led to a proliferation of lobbying.

- But even when a beauty contest approach was replaced with an auction, it mattered how the auction was designed. For instance, if spectrum is auctioned at the regional level, national players may not get seamless access to optimum quality of spectrum across the country; as a result, they may not bid as aggressively. In the US, such a mistake led to a second-hand market where companies traded among themselves with little revenue accruing to the government.

Key variables that determine the outcome of an auction

Three key variables need to be understood while designing an auction.

- **Rules of the auction**
  - Bidding behavior is likely to differ if the rules stipulate open bids as against closed/sealed bids. The same applies to single bids versus multiple bids, or whether bids are made one after another or everyone bids at the same time.
- **The commodity or service being put up for auction**
  - In terms of telecom spectrum, it might be easier to peg the right value for each bidder because most bidders are likely to put the spectrum to the same use. This is called the "common" value of an object. But this may not be the case with some other commodities, say a painting.
- **Uncertainty**
  - For instance, which bidder has what information about the object, or even the value another bidder associates with the object.

Details of the research

- Wilson developed the theory for auctions of objects with a common value — a value which is uncertain beforehand but, in the end, is the same for everyone.
- Wilson showed what the **"winner's curse" is in an auction** and how it affects bidding.
- Milgrom "formulated a more **general theory of auctions that not only allows common values** but also private values that vary from bidder to bidder".
- He "analysed the **bidding strategies in a number of well-known auction formats**, demonstrating that a format will give the seller higher expected revenue when bidders learn more about each other's estimated values during bidding".

FERTILISER SUBSIDY

GS-III ECONOMY

Context

- The government proposes to **limit the amount of fertilisers each farmer can get** during a cropping season.
- Farmers buy **fertilisers at MRPs (maximum retail price)** below their normal supply-and-demand-based market rates or what it costs to produce/import them.

How fertiliser subsidy is given?

- Farmers buy fertilisers **at MRPs (maximum retail price) below their normal supply-and-demand-based market**

rates or what it costs to produce/import them.

- The difference, which **varies according to plant-wise production cost and import price**, is footed by the Centre as subsidy.
- The MRPs of **non-urea fertilisers are decontrolled or fixed by the companies**.
- Decontrolled fertilisers, thus, retail way above urea, while they also attract lower subsidy.
- The subsidy **goes to fertiliser companies**, although its **ultimate beneficiary is the farme**r who pays MRPs less than the market-determined rates.
- Companies, until recently, were paid after their bagged material had been dispatched and received at a district's railhead point or approved godown.
- From March 2018, a new so-called direct benefit transfer (DBT) system was introduced, wherein subsidy payment to the companies would happen only after actual sales to farmers by retailers.
- Each retailer now has a point-of-sale (PoS) machine linked to the **Department of Fertilisers' e-Urvarak DBT portal**.
- Anybody buying subsidised fertilisers is required to furnish his/her **Aadhaar unique identity or Kisan Credit Card number**.
- Only upon the sale getting registered on the e-Urvarak platform can a company claim subsidy, with these being processed on a weekly basis and payments remitted electronically to its bank account.

Benefits of DBT system in fertilizer subsidy

- The main motive is to **curb diversion.**
- Being super-subsidised, urea is always **prone to diversion for non-agricultural use** apart from being **smuggled to Nepal and Bangladesh.**
- The scope for leakage was more in the earlier system, right from the **point of dispatch till the retailer ended**.
- With DBT, pilferage happens **only at the retailer level**, as there is no subsidy payment till sales are made through POS machines and subject to the buyers' biometric authentication.

Way forward

- The time has come to **seriously consider paying farmers a flat per-acre cash subsidy** that they can use to purchase any fertiliser.
- The **amount could vary, depending on the number of crops grown** and whether the land is irrigated or not.
- This is, perhaps, the only sustainable solution to **prevent diversion and also encourage judicious application of fertilisers**, with the right nutrient (macro and micro) combination based on proper soil testing and crop-specific requirements.

Report of Standing Committee on Chemicals and Fertilizers

- The Committee noted that fertilizer subsidy resulted in a **tremendous growth of agricultural productivit**y, which was **necessary for food security** of the huge population of the country.
- However, it has also led to negative effects such as **over-use of fertilizers, their imbalanced use, and the resultant soil degradation**.
- The Committee noted that any drastic change in the existing fertilizer subsidy policy would have a huge bearing on the food security of the country.
- It recommended that:
  o any such drastic change must be effected only after an **in-depth study and wider consultations with all stakeholders** (including the concerned central and state government departments, fertilizer industry, and farmers and their associations),
  o **no hasty decision** should be taken,
  o **interests of small and marginal farmers** should be firmly kept in mind, and
  o best **international practices** should be carefully studied.
- It also recommended that **education and awareness of farmers** about the balanced use of fertilizers should be an integral part of the policy.
- The Committee recommended that the government should take all possible steps to reduce its expenditure on subsidy by:
  o **modernising** fertilizer manufacturing plants,
  o adopting best practices of manufacturing and strict energy norms, and
  o building a **strong research and development** base for continuously upgrading the manufacturing technology, so as to reduce the manufacturing cost.

Context

- In back-to-back moves aimed at controlling onion prices, the **government has relaxed import norms and now reintroduced stock limits.**

Reason for rise in onion prices

- They have been rising as reports started coming in of **massive losses to kharif onions** caused by **heavy rainfall in north Karnataka**. This crop was meant to arrive after September and was expected to feed the markets until the arrival of the kharif crop from Maharashtra towards the end of October.
- There are three main onion crops — kharif (June-July sowing, post-October harvest), late kharif (September sowing, post-December harvest), and rabi (December-January sowing, post-March harvest).
- The **rabi crop has the least moisture content, making it amenable to storage.** Farmers, especially in Maharashtra, store it in on-field structures called kanda chawls to protect it from moisture and light. This crop feeds the markets till the next one arrives.
- The heavy rain in September not only destroyed the new crop in Karnataka but also **took a toll on stored onions in states like Madhya Pradesh and Gujarat.**
- Rain in the onion belt of Ahmednagar, Nashik and Pune had caused **water seepage into the structures.**
- Also, agriculture officers say, the **shelf life of the onion is lower this year due to overuse of urea** by farmers.

Steps taken by the government

- The Centre applied the first brakes on rising prices on September 14, when it **banned the export of onions.**
  - This was done when the amendment to Essential Commodities Act 1955 took away the power of the government to put stock limits on onions and a few other commodities.
  - Stock limits have been a potent weapon for controlling prices. But even after the export ban, prices continued to rise due to a supply-demand mismatch.
- This was followed by the **relaxation of import norms**, to **allow easy shipping in from Iran, Turkey and other onion-producing nations**.
- And on Friday, the **government reintroduced the stock limit.** Wholesale traders are now allowed to **stock up to 25 tonnes of onion**, and **retail traders up to 2 tonnes**. These limits were set after taking into consideration the rise in prices year-on-year.

Will onion imports help bring prices down?

- The demand for onions from Iran **comes from the hotel and hospitality industry** rather than from the retail buyer. Such onions, they point out, **lack pungency and are larger than Indian ones.**
- Farmers say the **rain has not only damaged the almost market-ready crop** but also taken a toll on the **nurseries where farmers were raising saplings for the late kharif and rabi crops**.

Prospects for the next crop

- Farmers and agricultural officers have talked about a **dire shortage of onion seeds**, which can cast a **shadow on the all-important rabi season.**
- Normally, farmers generate their own seeds by allowing a portion of the crop to flower and then produce seeds.
- However, this season, they skipped this step and **sold their entire crop in view of the good prices being offered**.
- Non-availability of good seeds has caused concerns and the available seeds are being sold at a premium.

Way Forward

- **Buffer stocking** with ample storage has to be created.
- If the government feels that traders are colluding to rig the market, then **Competition Commission of India** should look into it. The government banning exports or imposing stocking limits is not a solution.
- **Increase processing capacities** for TOP. Since, buffer stocking for tomatoes is not possible, processing remains the only solution. To propagate the use of processed products (tomato puree, onion flakes, powder) among urban and bulk consumers (hospitals, schools, armed forces), the government should run campaigns in association with industry organisations, as was done for eggs.
- **Direct buying by organised retailers** from FPOs through contract farming, bypassing the mandi system, should be encouraged. Like dairy cooperatives, TOP cooperatives and retail outlets like Safal across the country should be opened.

NATURAL GAS UNDER GST

Context

- Experts have argued that bringing natural gas under the GST would **lead to a reduction in the cascading impact of taxes** on industries such as power and steel, which used natural gas as an input.
- The inclusion of natural gas under the GST regime would **do away with the central excise duty and different value added taxe**s imposed by states.
- Currently petrol, diesel, aviation turbine fuel, natural gas and crude oil fall **outside India's Goods and Services Tax (GST) regime**.

Why is it important to bring natural gas under the GST regime?

- Experts have argued that bringing natural gas under the GST would **lead to a reduction in the cascading impact of taxes on industries such as power and steel**, which used natural gas as an input.
- The inclusion of natural gas under the GST regime **would do away with the central excise duty** and **different value added taxes imposed by states**.
- This would lead to an **increase in the adoption of natural gas** in line with the government's stated goal to increase the share of natural gas in the country's energy basket from 6.3% to 15%.
- The **energy consumption per capita in India is just 30 percent** of the world average. There is a **huge potential** with a very dynamic young population and that is a key priority of the Indian government.

LABOUR CODES

Context

- India, and the entire world, witnessed the **spectacle of the country's employment precarity pour out on its roads and highways** — men, women and children, in distress of having lost jobs, income and shelter, with no recourse to social security to protect them in those hard days.

Background

- Between 2004-05 and 2017-18, the **share of salaried workers outside agriculture without any written contract increased** from 60 per cent to 71 per cent.
- Even in **private and public limited companies**, this share increased from 59 per cent to 71 per cent.
- The government and the public sector do not offer a different picture with the share of such workers increasing from 27 per cent to 45 per cent over the period.
- Many of the wage **jobs in the organised sector came through contractors.** In organised manufacturing, the reported share of **contract labour increased from 13 per cent in 1995-06 to 36 per cent in 2017-18.**
- A policy balm to the exposed blisters of precarity was much needed. The response came in the form the **three revised labour Code Bills** — on **Industrial Relations, Occupational Safety, Health and Working Conditions, and Social Security** — which were introduced in Parliament in the Monsoon Session, and approved without any discussion or debate on September 23.
- These three labour codes, along with the **Code on Wages approved earlier**, touch the lives of every Indian worker, except a tiny stratum of the public sector and managerial employees.
- In the name of codification, the Codes have **implemented radical changes in the nearly century-old edifice of labour laws** in this country.

Overview of Labour Law Reforms

- The central government proposes to **replace 29 existing labour laws with four Codes.** The objective is to **simplify and modernise labour regulation.**
- The major challenge in labour reforms is to facilitate **employment growth while protecting workers' rights.**
- Key debates relate to the coverage of small firms, deciding thresholds for **prior permission for retrenchment, strengthening labour enforcement, allowing flexible forms of labour,** and promoting collective bargaining.
- Further, with the passage of time, labour laws need an overhaul to ensure **simplification and updation**, along with provisions which can capture the needs of emerging forms of labour (e.g., gig work).

Challenges and the Approaches taken by the four Codes

- **Coverage:** Most labour laws apply to establishments over a certain size (typically 10 or above). Size-based thresholds may

help firms in reducing compliance burden. However, one could argue that basic protections related to wages, social security, and working conditions should apply to all establishments. Certain Codes retain such size-based thresholds.

- **Retrenchment:** Establishments hiring 100 or more workers need government permission for closure, layoffs or retrenchments. It has been argued that this has created an exit barrier for firms and affected their ability to adjust workforce to production demands. The Industrial Relations Code raises this to 300, and allows the government to further increase this limit by notification.
- **Labour enforcement:** Multiplicity of labour laws has resulted in distinct compliances, increasing the compliance burden on firms. On the other hand, the labour enforcement machinery has been ineffective because of poor enforcement, inadequate penalties and rent-seeking behaviour of inspectors. The Codes address some of these aspects.
- **Contract labour:** Labour compliances and economic considerations have resulted in increased use of contract labour. However, contract labour have been denied basic protections such as assured wages. The Codes do not address these concerns fully. However, the Industrial Relations Code introduces a new form of short-term labour – fixed term employment.
- **Trade Unions:** There are several registered trade unions but no criteria to 'recognise' unions which can formally negotiate with employers. The Industrial Relations Code creates provisions for recognition of unions.
- **Simplification and updation:** The Codes simplify labour laws to a large extent but fall short in some respects. Further, the Code on Social Security creates enabling provisions to notify schemes for 'gig' and 'platform' workers; however, there is a lack of clarity in these definitions.
- **Delegated Legislation:** The Codes leave several key aspects, such as the applicability of social security schemes, and health and safety standards, to rule-making. The question is whether these questions should be determined by the legislature or be delegated to the government.

4 Labour Codes

- In 2019, the Ministry of Labour and Employment introduced four Bills on labour codes to consolidate 29 central laws.
- These Codes regulate:
    - Wages,
    - Industrial Relations,
    - Social Security, and
    - Occupational Safety, Health and Working Conditions.
- While the Code on Wages, 2019 has been passed by Parliament, Bills on the other three areas were referred to the Standing Committee on Labour.
- The Standing Committee submitted its reports on all three Bills. The government has replaced these Bills with new ones in September 2020.

Code on Wages, 2019

- It seeks to amend and consolidate the laws relating to wages and bonus.
- It subsumes the provisions of the
    - Payment of Wages Act, 1936 ("Payment of Wages Act"),
    - the Minimum Wages Act, 1948 ("Minimum Wages Act"),
    - the Payment of Bonus Act, 1965 ("Payment of Bonus Act") and
    - the Equal Remuneration Act, 1976 ("Equal Remuneration Act").
- Unlike the Payment of Wages Act which is applicable to employees drawing salary below a statutory limit, and the Minimum Wages Act which is applicable to employees engaged in scheduled establishments, the Code envisages uniform applicability of the provisions of timely payment of wages and minimum wages to all employees irrespective of the wage ceiling and sector.

The Industrial Relations Code, 2020

- The 2019 Bill provided that all industrial establishments with 100 workers or more must prepare standing orders on the matters listed in a Schedule to the Code.
- These matters relate to:
    - classification of workers,
    - manner of informing workers about work hours, holidays, paydays, and wage rates,
    - termination of employment, and
    - grievance redressal mechanisms for workers
- Laws subsumed:
    - The Trade Unions Act, 1926.
    - the Industrial Employment (Standing Orders) Act, 1946; and

- o the Industrial Disputes Act, 1947.
- Salient features:
  - o The definition of "Worker" has been revised to include persons in supervisory capacity getting wages up to eighteen thousand rupees per month.
  - o Concept of "Re-skilling fund" has been introduced.
  - o Registered trade unions may be recognised by the Centre/State as Centre/State trade unions as per necessity.
  - o Concept of Negotiating Trade Union and Negotiating Trade Councils has been introduced to streamline negotiations with the employer.
  - o The definition of "Strike" includes casual leave taken by more than fifty per cent of the employees on a given day. Trade unions have to give notice of 14 days before going on strike.
  - o Provisions with respect to Standing Orders apply to Industrial Establishments with more than 300 employees only.
  - o Establishment with less 300 workmen can be laid-off, retrenched, closed without government approval.
  - o An industrial disputes can be voluntarily referred to arbitration by the employer as well as the workers

The Code On Social Security, 2020

- The Code on Social Security, 2020, subsumes eight existing central labour laws.
- These laws are the Employees' Provident Funds and Miscellaneous Provisions Act, 1952; Payment of Gratuity Act, 1972; Employees' Compensation Act, 1923; Maternity Benefit Act, 1961; Employees' State Insurance Act, 1948; Workers Cess Act, 1996; Cine Workers Welfare Fund Act, 1981; Building and Other Construction and Unorganised Workers' Social Security Act, 2008.
- The Code on Social Security, 2020 consists of new rules for contribution to social security and payment of employee benefits, including retirement benefits.
- The law also expands scope to cover fixed-term contract workers who will now be eligible for gratuity; whereas earlier only employees which were permanent were covered.
- Under the Code, gratuity becomes due to an employee upon their termination from employment after a continuous service period of at least five years, which is the same as before.
- The events giving rise to gratuity are superannuation, retirement, resignation, death or disablement due to accident or disease or termination of a contract under fixed-term employment or on the happening of any event notified by the central government.
- A social security fund will be created for paying these benefits to workers and it will be funded by central and state governments and also through CSR funding.
- Aggregators who are digital intermediaries employing gig workers will have to set aside at least around 1-2 percent of their annual turnover (amount not exceeding 5 percent of the amount payable to the workers) for the purpose of this social security fund.
- The Code also provides for the setting up of a 'National Social Security Board'.

The Occupational Safety, Health And Working Conditions Code, 2020

- The OSHW Code is applicable to:
  - o every establishment where any industry, trade, business, manufacturing or occupation is carried on in which ten or more workers are employed; or
  - o a factory, motor transport undertaking, newspaper establishment, audio-video production, building and other construction work or plantation, in which ten or more workers are employed; or
  - o a mine or port or vicinity of port where dock work is carried out.
- For effective implementation of the OSHW Code, appointment of Inspector-cum-Facilitators has been prescribed.
- Additionally, National and State Occupational Safety and Health Advisory Boards will be constituted to advise and assist the Government on matters relating to occupational safety and health.
- The employer is responsible for maintaining health, safety and working conditions such as hygiene, cleanliness, ventilation, humidification and providing arrangements for treatment of wastes and events in the establishment.
- Welfare facilities including washing facilities, locker rooms, creche, canteens, sitting arrangements are also to be provided and maintained by an employer in the establishment.
- The working hours of a worker in an establishment have been fixed at 8 hours in a day except in case of mines wherein the Central Government may notify additional working hours.
- Further, for working journalists the Central Government may prescribe a maximum of 144 hours of work during any period of 4 consecutive weeks and a period of not less than 24 consecutive hours of rest during any period of 7 consecutive days.

Fixed Term Employment

- We might recall that in 2018, the government amended the Standing Orders on Employment Act and introduced the

category of **"fixed term" worker.** That category, which creates a **permanent cadre of temporary workers,** with **no prospects of career growth and job security**, will, after codification, be the **cornerstone of the emerging employment structure.**

Issues with the new changes
- Various government spokespersons had rationalised fixed-term employment by arguing that **industries had resorted to the third-party engagement of contract labour** to get around the rigidities in firing workers.
- There is also provision for **liberalising the provisions relating to employment of contract labour** and **making their regulation applicable only in establishments employing 50 or more workers**, instead of 20 or more, as was the case earlier.
- The key provisions which regulate the employment of inter-state migrant workers have been further **diluted and made applicable only to establishments employing 10 or more such workers, compared to five earlier**.
- Along with the provisions of retrenchment, the **applicability of the Standing Orders, which regulate the categorization as well as the terms of employment of workers in establishments**, has also been raised from 100 to 300 workers.
- The **threshold for factories has now been doubled — from 10 to 20 workers with power** — thereby eliminating a large number of important regulatory provisions for the smaller factories.
- Relevant governments have been given **much more leeway in exempting establishments from the applicability of a whole range** of provisions in the Code.
- Inspection provisions have been **diluted in all the Codes and will no longer even be complaints** based.

Conclusion
- These changes may appeal to **myopic interests which believe that industrial prosperity** can be built on a race to the bottom for workers.
- But as the **National Commission for Enterprises in the Unorganized Sector (NCEUS)** has cogently argued, and the current crisis shows, informality contributes to inequality and to conditions which make sustainable growth impossible, and economic recovery more difficult.
- It also creates conditions in which **employers under-invest in workers' capacities and workers** are not invested in a company's future — leading to low productivity and lack of competitiveness.
- The NCEUS, therefore, made a **strong case for changes which balanced employers' interests with workers' security and rights.** It is this thinking that has led somewhat more enlightened governments, and industrialists, in India and the world over, to investing in the long-term future of workers and reversing the tide of precarity.

FLY ASH
GS-III ECONOMY

Context
- NTPC Ltd. has started to collaborate with cement manufacturers across the country to supply fly ash as part of its endeavour to achieve 100% utilisation of the by-product produced during power generation.
- The power producer is leveraging Indian Railways' sprawling network to transport fly ash in an economical and environment friendly manner.

About Fly Ash
- Fly ash is a fine powder that is a byproduct of burning pulverized coal in electric generation power plants.
- Fly ash is a pozzolan, a substance containing aluminous and siliceous material that forms cement in the presence of water.
- When mixed with lime and water, fly ash forms a compound similar to Portland cement. This makes fly ash suitable as a prime material in blended cement, mosaic tiles, and hollow blocks, among other building materials.

Applications for Fly Ash
- Fly ash can be used as prime material in many **cement-based products**, such as poured concrete, concrete block, and brick.
- One of the most common uses of fly ash is in **Portland cement concrete pavement or PCC** pavement.
- **Road construction projects** using PCC can use a great deal of concrete, and substituting fly ash provides significant economic benefits.
- Fly ash has also been used as **embankment and mine fill**, and it has increasingly gained acceptance by the Federal Highway Administration.

Benefits

- Fly ash can be a **cost-effective substitute** for Portland cement in many markets.
- Fly ash is also recognized as an **environmentally friendly material** because it is a byproduct and has low embodied energy, the measure of how much energy is consumed in producing and shipping a building material.
- Fly ash requires **less water than Portland cement** and is easier to use in cold weather.
- Other benefits include Produces various set times, Cold weather resistance, High strength gains, Considered a non-shrink material, Produces dense concrete with a smooth surface and sharp detail, Great workability, Reduces crack problems, permeability, and bleeding, Reduces heat of hydration.

Disadvantages

- Smaller builders and housing contractors **may not be familiar with fly ash products**, which can have different properties depending on where and how it was obtained.
- Additionally, fly ash applications may **face resistance from traditional builders** due to its tendency to effloresce along with concerns about freeze/thaw performance.
- Other concerns about using fly ash in concrete include Slower strength gain, Seasonal limitation
- Increased need for air-entraining admixtures, Increase of salt scaling produced by higher proportions of fly ash.

Fly Ash Generated vs Utilized
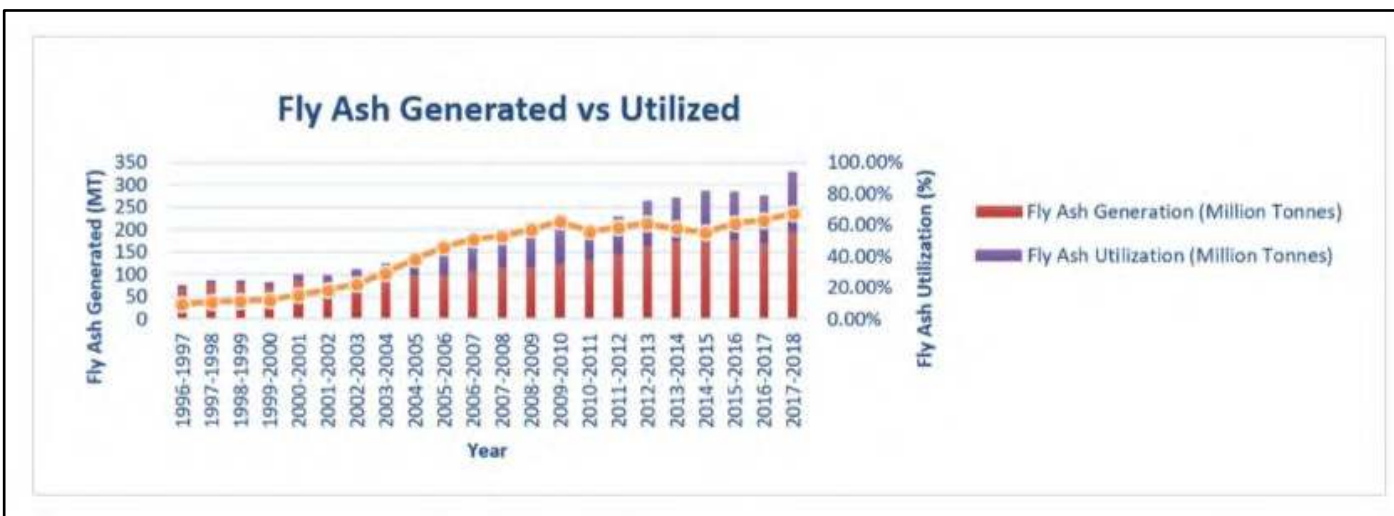
Steps taken by the government

- GST rates on fly ash and its products have been reduced to 5%.
- A web portal for monitoring of fly ash generation and utilization data of Thermal Power Plants and a mobile based application titled "ASHTRACK" has been launched by the Government that will help to establish a link between fly ash users and power plants executives for obtaining fly ash for its use in various areas.
- Ash-park has been developed and awareness programme for utilisation of fly ash and its products have been conducted.

Way Forward

- Despite shifting the energy generation modes from thermal to other renewable sources, the **dependence on coal is expected to be significant in the next decade**. This results in a substantial amount of fly ash generation and the ways need to be explored for its better utilisation.
- All associated stakeholders must work together to **upgrade the existing policies required for the successful commercialisation** of these products in the market.
- Barriers of fly ash utilisation need to be investigated more comprehensively and accordingly a plan of action can be worked out to improve the fly ash utilisation in the identified application, i.e., bricks and blocks.

APTI PLUS
Academy for Civil Services Pvt. Ltd.

GRAPHENE MASKS

Context
- Recently, the researchers from Hong Kong have produced a laser-induced form of graphene masks that demonstrated potential in deactivating corona viruses.

What is Graphene?
- Graphene is a **single layer (monolayer) of carbon atoms,** tightly bound in a hexagonal honeycomb lattice.
- It is an allotrope of carbon in the form. Layers of graphene stacked on top of each other form graphite.
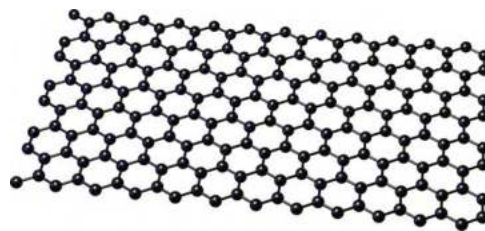
Properties of Graphene
- Graphene is the thinnest compound known to man at one atom thick.
- The lightest material known
- The strongest compound discovered (between 100-300 times stronger than steel)
- Best conductor of heat at room temperature
- Best conductor of electricity
- uniform absorption of light across the visible and near-infrared parts of the spectrum
- It is also 97.7 percent transparent and has an extremely low permeability rate, with even helium atoms being unable to penetrate it.
- Graphene has the highest thermal conductivity ever recorded, standing at 10 times higher than copper.

Graphene as Mask
- Graphene has a high level of anti-bacterial efficiency.
- Researchers attribute this to either the damage of bacterial cell membranes by graphene's sharp edges, or the hydrophobic (water-repelling) property of the substance.
- In tests with two types of human coronavirus, the masks inactivated 90% of viral particles in sunlight within just 5 minutes, and 100% within 10 minutes.
- The technique is also more environmentally friendly, as the masks are reusable if decontaminated correctly.
- Thus, Graphene masks can help to resolve the problems of sourcing raw materials and disposing of non-biodegradable masks.
- The graphene masks are also easily produced at low cost.

Range of Applications of Graphene
- In Solar Cells, Batteries, Nuclear Power Plants, Thermoelectric, Alcohol Distillation, Fuel Cells, Drug Delivery, In Cancer Treatment, Gene Delivery, Photothermal Therapy, Diabetes Monitoring, Dialysis, Bone and Teeth Implantation, Tissue Engineering Cell Therapy, UV Sensors, For the Brain, HIV Diagnosis, Biosensors, Bactericide, Birth Control, Deaf-Mute Communication, Body Scans, Generating Light, Transistors, Waterproof Electronics, Wearable Electronics, Touch screens, Flexible Screens, Hard Drives and Memories, Elastic Robots, Superconductor, Optoelectronics, Optical Sensors, Security Sensors, Food Packaging, Water Purification, Water Filtration, Desalination, Crop Protection, Food Security, Shoes, Helmets, Tires, Clothes, Rackets, Insulation, Construction, Photography, Automotive, Airplanes, Paints, Ballistics, Bulletproof vests, protective clothing weapons, Military Protective Equipment, Thermal and Infrared Vision, Machinery Lubricants, Corrosion Protection for Glass, Radiation Shielding, Anti-corrosion Oil and Gas Pipes

No need to memorize. Just take a glance at the applications.

TREMENDOUS APPLICATIONS
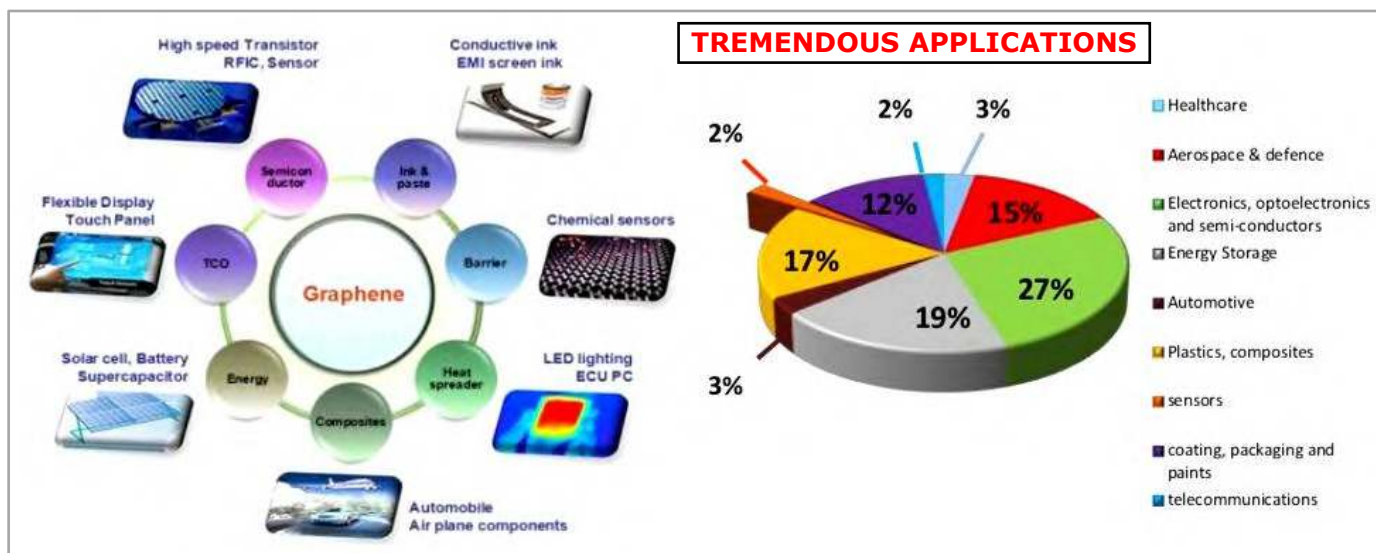
NOBEL PRIZE FOR MEDICINE OR PHYSIOLOGY

GS-III SCIENCE & TECHNOLOGY

Context

- Americans Harvey J Alter and Charles M Rice, and British scientist Michael Houghton were awarded the Nobel Prize for Medicine or Physiology on Monday for the discovery of the Hepatitis C virus.

Observations made by the Nobel Committee

- Nobel Committee noted that the trio's work helped explain a major source of blood-borne hepatitis that couldn't be explained by the hepatitis A and B viruses.
- It makes possible blood tests and new medicines that have saved millions of lives.
- Highly sensitive blood tests for the virus are now available.
- These have essentially eliminated post-transfusion hepatitis in many parts of the world, greatly improving global health.
- Their discovery also allowed the rapid development of antiviral drugs directed at hepatitis C.
- For the first time in history, the disease can now be cured, raising hopes of eradicating hepatitis C virus from the world population.

Hepatitis C Virus

- Hepatitis C is a viral infection that causes liver inflammation, sometimes leading to serious liver damage.
- The hepatitis C virus (HCV) spreads through contaminated blood.
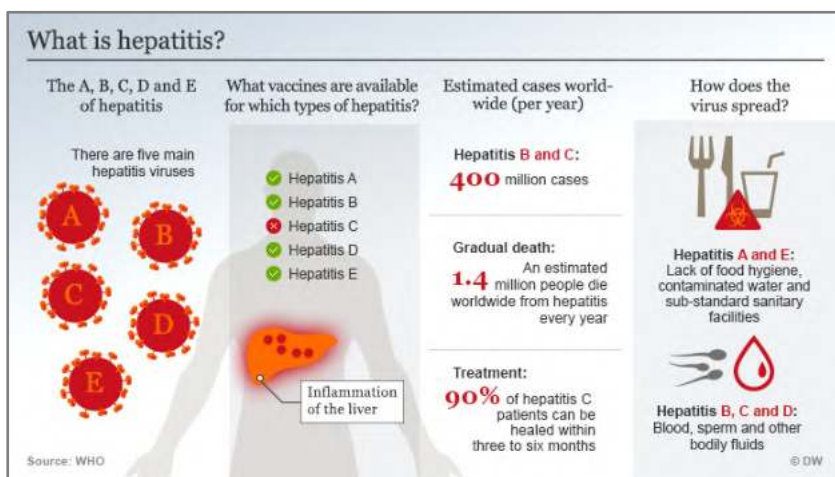
Feature	Hepatitis A	Hepatitis B	Hepatitis C	Delta	Hepatitis E
Incubation period (wk)	2–6 (avg. 4)	4–26 (avg. 13)	2–20	4–8	—
Virus	RNA	DNA	RNA	Incomplete RNA (needs presence of HBsAg)	RNA
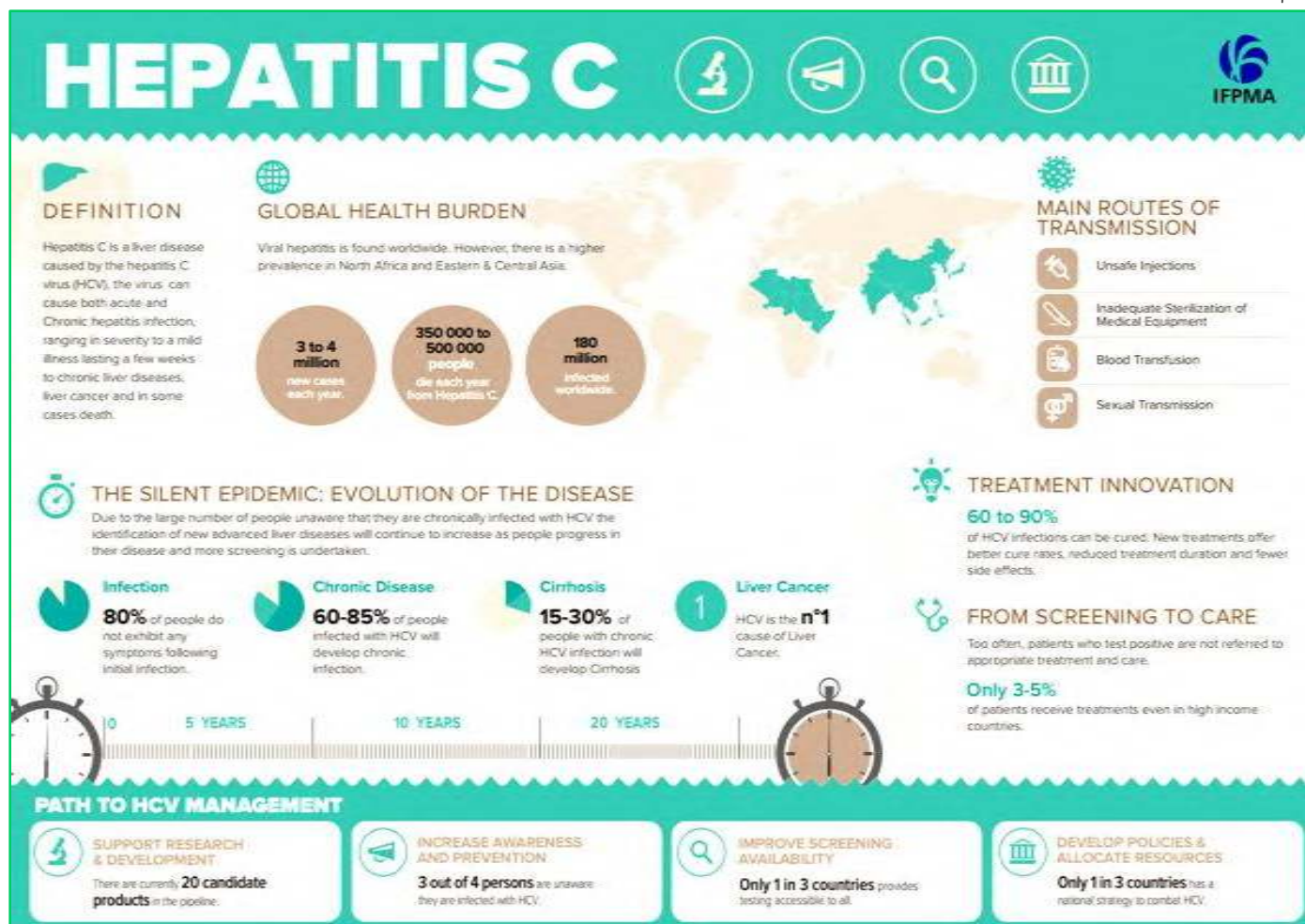
NOBEL PRIZE IN PHYSICS

GS-III   SCIENCE & TECHNOLOGY

Context
- 2020 Nobel Prize in physics went to Roger Penrose and the other half jointly to Reinhard Genzel and Andrea Ghez for furthering the understanding of black holes

Observation by Nobel Laureates
- Penrose proved with mathematics that the formation of black holes was possible, based on Albert Einstein's general theory of relativity.
- Reinhard Genzel and Andrea Ghez discovered a supermassive compact object at the centre of our galaxy.

What are Black Holes?
- A black hole is a region of space-time where gravity is so strong that nothing—no particles or even electromagnetic radiation such as light—can escape from it.
  i.e it has a high escape velocity. Escape velocity is the speed at which an object must travel to override a planet or an object's gravitational force. For instance, for a spacecraft to leave the surface of the Earth, it needs to be travelling at a speed of about 40,000 km per hour.
- The boundary of the region of the black hole from which no escape is possible is **called the event horizon.**
- Here, the velocity of an object passing nearby needs to exceed the speed of light to escape the black hole.
- Otherwise Matter and radiation fall in, but they can't get out. Speed of light is the speed limit of the cosmos.

How Do Black Holes Form?
- Primordial black holes are thought to have formed in the early universe, soon after the big bang.
- Stellar black holes form when the center of a very massive star collapses in upon itself. This collapse also causes a supernova, or an exploding star, that blasts part of the star into space.
- Supermassive black holes formed at the same time as the galaxy they are in. The size of the supermassive black hole is related to the size and mass of the galaxy it is in.

STRUCTURE OF BLACK HOLES:

- **Singularity:**
  The point where whole mass of a black hole is concentrated.
- **Photon Sphere:**
  The outer edge where light bends but is still escapable.
- **Event Horizon:**
  It is a "point of no return" around a black hole.
- **Accretion Disk:**
  It is a disk of gases, dust, stars and planets that fall into the orbit of a black hole.
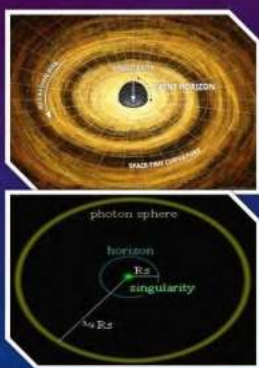
TYPES OF BLACK HOLES:

- **Stellar-mass Black Holes:**
  Stellar-mass black holes are created when massive stars explode, leaving behind a black hole with the mass of just a few suns.
- **Supermassive Black Holes:**
  Supermassive black holes exist in the hearts of galaxies and usually contain the mass equivalent to millions and billions of suns.
- **Intermediate Black Holes:**
  Such bodies could form when stars collide in a chain reactions and usually contain the mass equivalent to hundreds and thousands of suns.

HOW DO WE FIND BLACK HOLES:

- The X-rays are sent off into space and when they strike the matter around the black hole, it can be detected.
- Binary X-ray sources are placed to find strong black hole.
- Another sign of the presence of a black hole is random variation of emitted X-rays. And gravitational lensing, accretion disks and gas jets.

Theory of General Relativity& Black Hole Formation

- Einstein's 1915 general theory of relativity holds that gravity is due to the warping/bending of space and time.
- As a heavy ball curves a good mattress and deforms it, same way energy and matter (objects like planets, sun) curves space and time and deforms it which in turn results in gravity.
- Deformation of space and time in the plane; here represented as grids, gives rise to the gravity:
- When the deformation of space and time is infinite, the deformation is not a curve anymore. It is now a black hole.
- Thus, the theory of general relativity predicts that a sufficiently compact mass can deform spacetime to form a black hole.
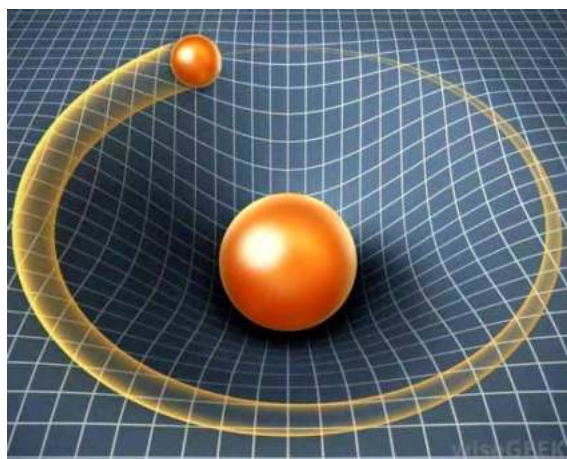
GENERAL RELATIVITY: WARPED SPACE:

low mass star

high mass neutron star

General Relativity: Einstein described gravity as a warping of space-time around a massive object. The stronger the gravity, the more space-time is warped.

Life Cycle of a Star
By: Idrees Kahloon and Kevin Waterman
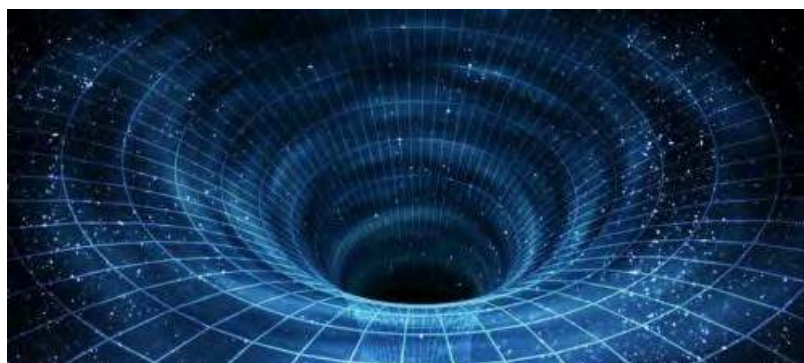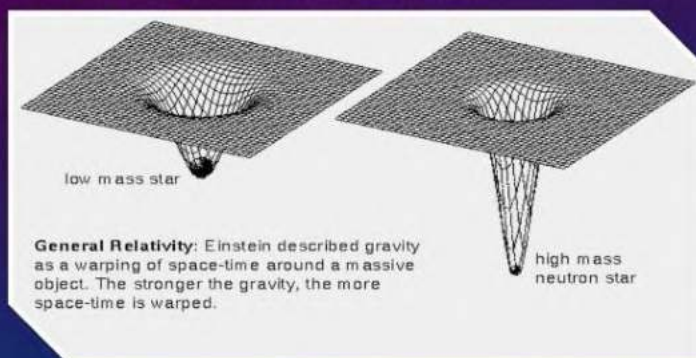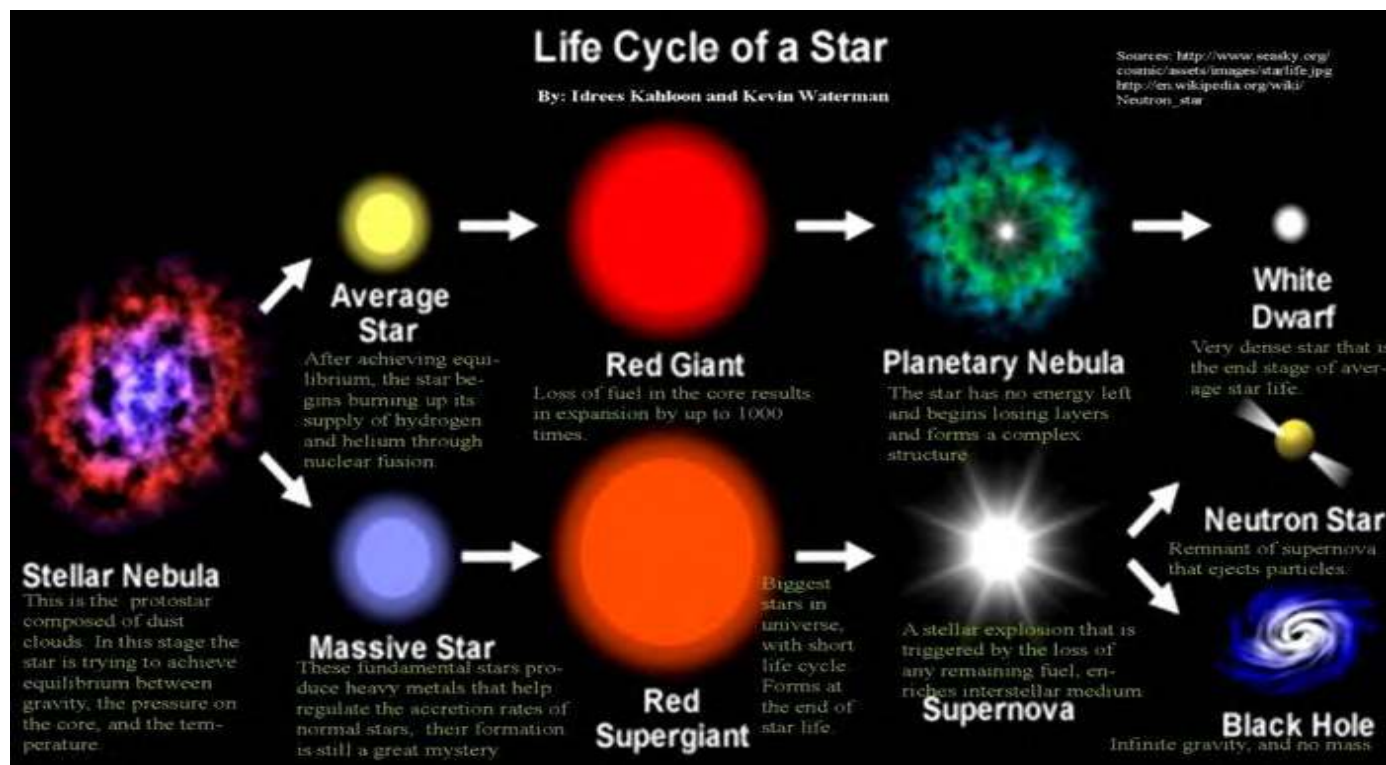
Could a Black Hole Destroy Earth?
- Black holes do not wander around the universe, randomly swallowing worlds.
- They follow the laws of gravity just like other objects in space.
- The orbit of a black hole would have to be very close to the solar system to affect Earth, which is not likely.
- If a black hole with the same mass as the sun were to replace the sun, Earth would not fall in.
- The black hole with the same mass as the sun would keep the same gravity as the sun.
- The planets would still orbit the black hole as they orbit the sun now.

Will the Sun Ever Turn Into a Black Hole?
- The sun does not have enough mass to collapse into a black hole.
- In billions of years, when the sun is at the end of its life, it will become a red giant star.
- Then, when it has used the last of its fuel, it will throw off its outer layers and turn into a glowing ring of gas called a planetary nebula.
- Finally, all that will be left of the sun is a cooling white dwarf star.

THE MILKY WAY GALAXY:

- The Milky Way Galaxy is our home galaxy in the universe.
- The Milky Way began forming around 12 billion years ago and is part of a group of about 50 galaxies called the **Local Group** which itself is part of a larger gathering of galaxies called the Virgo Super cluster of galaxies.
- The Milky Way moves through space at a velocity of about 552 kilometers per second.
- *100-400* billion stars are present in this galaxy.
- Its galactic center is located about 26,000 light-years from Earth.
- At the center of Milky Way Galaxy lies a super massive black hole named as **Sagittarius A***.
- This black hole contains the mass of about 4.3 million suns.
- The Milky Way contains a few hundred million stellar black holes.
- The speed of stars, gases and dust in accretion disk of this black hole is 220 kilometers per second.
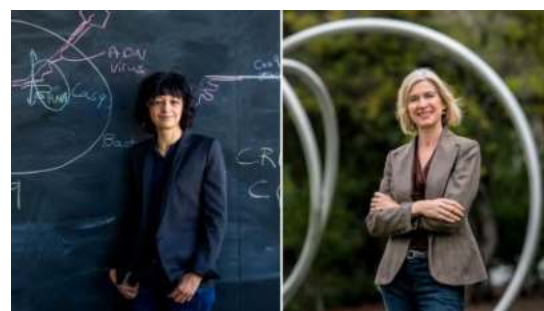
What is in news?

- This year's Nobel Prize in Chemistry has been awarded to two scientists who transformed a bacterial immune mechanism, called CRISPR, into a tool that can edit the DNA/genomes ofeverything from wheat to mosquitoes to humans.
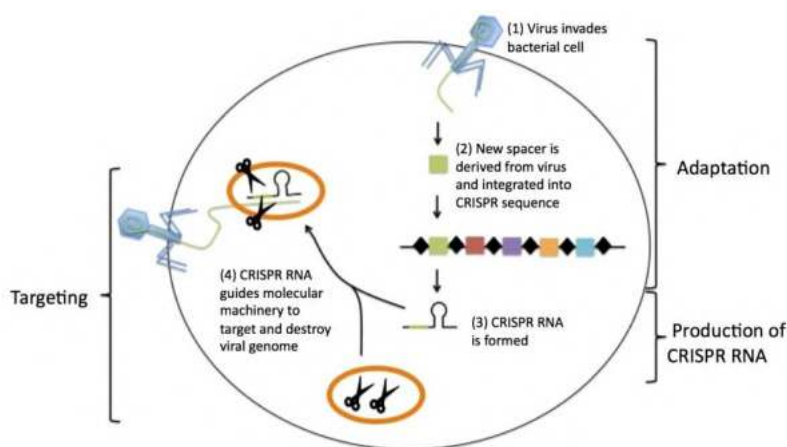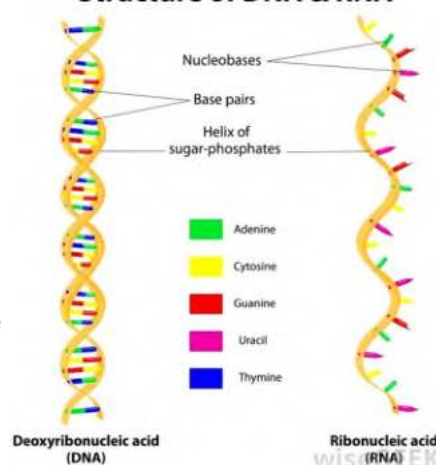
CRISPR

- CRISPR **(clustered regularly interspaced short palindromic repeats**) is a family of DNA sequences found in the genomes of prokaryotic organisms such as bacteria and archaea.
- The CRISPR-Cas system is a prokaryotic immune system.
- It defends against phage and conjugative plasmid infection.
  - ✓ A bacteriophage, also known informally as a phage, is a virus that infects and replicates within bacteria and archaea.
  - ✓ A **plasmid** is a small, extra-chromosomal DNA molecule within a cell that is physically separated from chromosomal DNA and can replicate independently. It can cause infection.

Cas9

- Cas9 – is one of the enzymes produced by the CRISPR system – which binds to the DNA and cuts it, shutting the targeted gene off.

Structure of DNA & RNA

Nucleobases
Base pairs
Helix of sugar-phosphates

- Adenine
- Cytosine
- Guanine
- Uracil
- Thymine

Deoxyribonucleic acid (DNA)

Ribonucleic acid (RNA)

(1) Virus invades bacterial cell

(2) New spacer is derived from virus and integrated into CRISPR sequence — **Adaptation**

(3) CRISPR RNA is formed — **Production of CRISPR RNA**

(4) CRISPR RNA guides molecular machinery to target and destroy viral genome

Targeting

DNA editing

A DNA editing technique, called CRISPR/Cas9, works like a biological version of a word-processing programme's "find and replace" function.

HOW THE TECHNIQUE WORKS

Cell
Nucleus
Chromosome

Guide molecule

DNA-cutting enzyme

Defective DNA strand

Healthy DNA strand

A cell is transfected with an enzyme complex containing:
- Guide molecule
- Healthy DNA copy
- DNA-cutting enzyme

A specially designed synthetic guide molecule finds the target DNA strand.

An enzyme cuts off the target DNA strand.

The defective DNA strand is replaced with a healthy copy.

W. Foo, 24/04/2015

Sources: Reuters; Nature; Massachusetts Institute of Technology

REUTERS

What Is CRISPR?
UNDERSTANDING HOW THE CRISPR GENE-EDITING PROCESS WORKS

SUSAN

DNA double helix with sickle cell mutation

GUIDE RNA

Guide sequence

1. Susan has sickle cell disease caused by a single DNA letter mutation.

2. In the lab, scientists create a strand of GUIDE RNA that matches the mutated DNA sequence.

3. Cas9, AKA molecular scissors, is added to the RNA mix.

4. Susan receives an injection of RNA + Cas9 mix.

5. Guide RNA identifies the mutated DNA that causes sickle cell disease.

6. Cas9 cuts out the affected sequence.

Newly healthy DNA strand

SUSAN

7. Scientists insert a healthy DNA sequence to replace the clipped sequence.

8. If all goes smoothly, Susan no longer suffers from sickle cell disease.

Significance

- The **ability to cut DNA wherever we want** has revolutionized the life sciences.
- This editing process has a wide variety of applications including **basic biological research, development of biotechnology products, and treatment of diseases.**
- CRISPR-based therapies hold promise for the treatment of cancer and inherited disorders such as **sickle cell disease** and for the prevention and treatment of infectious diseases.
- CRISPR could enable scientists to **repair genetic defects** or use genetically modified human cells as therapies. Traditional gene therapy uses viruses to insert new genes into cells to try to treat diseases.
- The crispr-Cas9 genetic scissors were discovered 8 years ago, but have already benefited humankind greatly.

Concerns

- Various ethical concerns can emerge with genome editing including safety.
- Studies have shown that it could lead to mutations that lead to others down the line. If genetic edits are made to embryos, or to egg or sperm cells, these changes will be inherited by all future generations.
- CRISPR has also been used in one of the most controversial biomedical experiments, when a Chinese scientist edited the genomes of human embryos, creating a Designer Baby.

Way Ahead

- Genome editing should be regulated within the framework for gene-transfer research for allaying ethical concerns and reaping the benefits of this novel technology in medicine, genetics and agriculture to its fullest potential.
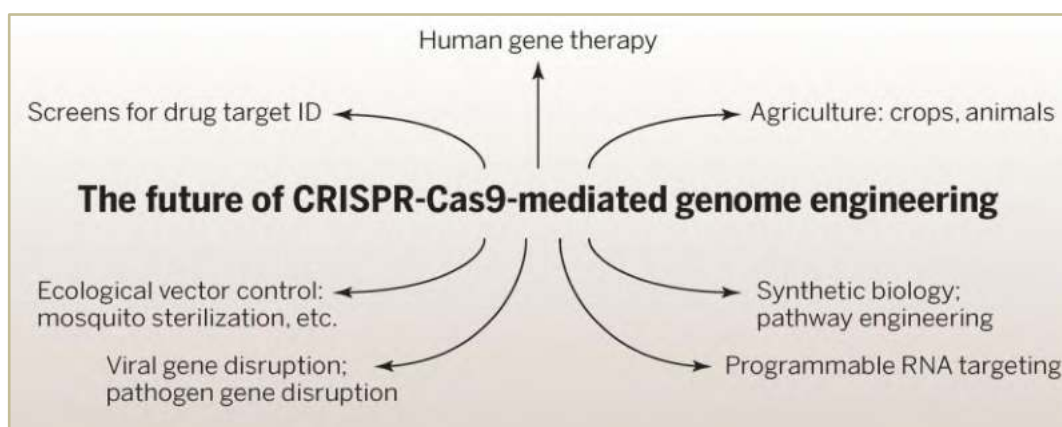
Context

- Recently, Global Virtual Summit on Artificial Intelligence (AI), RAISE 2020- **'Responsible AI for Social Empowerment 2020, was held.**

About RAISE 2020

- RAISE 2020 is **a first-of-its-kind global meeting of minds on Artificial Intelligence.**
- It is to drive India's vision and roadmap for social transformation, inclusion and empowerment through responsible AI.
- The event witnessed robust participation from global industry leaders, key opinion makers, Government representatives and academia.

Organizers

- The **MEITY and NITI Aayog** are organising the Mega Virtual Summit.

Aim and Objective

- To kick-start discussion on the creation of robust AI-powered public infrastructure that benefits all, not just in India but across the world.
- India, one of the founding members of the Global Partnership on Artificial Intelligence, aims to implement AI-based solutions around the world so that these lead to widespread social empowerment and prosperity.
- **#AIForAll** is at the core of India's AI strategy and the focus is to build responsible AI for social empowerment, transformation and inclusion.

Future prospects & Conclusion

- India is developing AI-based solutions for social empowerment across **spheres like healthcare, education, finance, agriculture and governance.**
- India **can become the AI laboratory of the world,** delivering intuitive solutions to a wide range of societal issues.
- From agriculture to fin-tech and healthcare to infrastructure, India is at the cusp of rapid development in artificial intelligence.

Artificial Intelligence	Machine Learning	Deep Learning
Artificial intelligence originated around 1950s.	Machine learning originated around 1960s.	Deep learning originated around 1970s.
AI represents simulated intelligence in machines.	Machine Learning is the practice of getting machines to make decisions without being programmed.	Deep Learning is the process of using Artificial Neural Networks to solve complex problems.
AI is a subset of Data Science.	Machine learning is a subset of AI & Data Science	Deep learning is a subset of Machine learning, AI & Data Science.
Aim is to build machines which are capable of thinking like humans.	Aim is to make machines learn through data so that they can solve problems.	Aim is to build neural networks that automatically discover patterns for feature detection.

USAGES OF ARTIFICIAL INTELLIGENCE

Banking & Personal Finance
- Fraud prevention as AI learns what types of transactions are fraudulent
- Credit decisions
- Client segmentation

Transport
- Reducing travel times through analysing traffic
- Ride sharing apps - determining the price, supply chain prediction
- Autonomous vehicles

Retail Spaces
- Cashless stores
- Virtual mirrors
- Footfall analysis and store optimisation

Education
- Plagiarism checkers
- Automated grading
- Customised digital learning interfaces
- Virtual teachers or lecturers
- Adaptive learning

Communication
- Spam filters on your emails
- Text and email reply suggestions
- Real time translation
- Emotion analytics

Gaming
- Thought controlled gaming
- Improved visual quality
- Gesture control
- AI coach
- Facial recognition for 3D avatars

Media
- Automated journalism
- Eliminating fake news
- Data analysis
- Bias removal
- Content analysis for organisation

Hospitality
- AI concierge
- Smart hotel rooms
- Personalised communications
- Predictive supply chain

Entertainment
- Music suggestions (Spotify, Apple Music, Google Play Music)
- Automatic music creation
- Film and TV suggestions (Netflix, Amazon Prime, Hulu)
- Marketing and advertising personalisation
- Search optimisation

Workplace
- Robotics in manufacturing
- Automated safety checks in factories
- Autonomous haulage
- Enhanced recruitment
- Automated timesheets (e.g. Blackbelt)

Mobile
- Voice-to-text
- Smart personal assistants like Alexa, Echo, Cortana, Google Assistant...

Sports
- Wearable tech to analyse performance
- Smart ticketing
- Automated video highlights
- Computer vision referee

Aerospace
- Commercial flight autopilot
- Weather detection

Online Shopping
- Search recommendations
- Customer service and sales chatbots
- 3D modeling

Healthcare
- Autonomous surgical robots
- Automatic disease identification and diagnosis
- Personalised treatment
- Drug discovery
- Identifying candidates for clinical trials
- Epidemic outbreak prediction
- Automation of routine tasks like X-Rays, CT scans, data entry
- Health monitoring/wearable health trackers
- Virtual doctors

Agriculture
- Robot harvesters
- Computer vision to monitor crop and soil health
- Predictive analysis for environmental impacts on crops

Real Estate
- Targeted advertising
- Market analysis
- Client segmentation

Social Networks
- Photo recognition
- Newsfeed personalisation
- Friendship suggestions
- Augmented reality filters
- Chatbots
- Automated video/music synchronisation

Defence
- Unmanned Aerial Vehicles (UAVs)
- Civilian detection
- Autonomous decision making
- Target identification
- Diagnosis and maintenance of weapons systems
- War gaming, simulation and training

Smart Homes
- Personal assistants
- Automatic goods ordering
- Home security
- Temperature and light control

Cybersecurity
- Incident detection
- Accelerated incident response

Insurance
- Risk identification
- Personalised pricing
- Client support

Events
- Facial recognition to scan attendees
- Personalised recommendations
- Sales chatbots

Politics & Government
- Targeted campaigning
- Public opinion monitoring
- Anticipating infrastructure failures and maintenance

The Ministry of Electronics and Information Technology (MeitY) is an executive agency of the Union Government. It was carved out of the Ministry of Communications and Information Technology in 2016 as a standalone ministerial agency responsible for IT policy, strategy and development of the electronics industry.
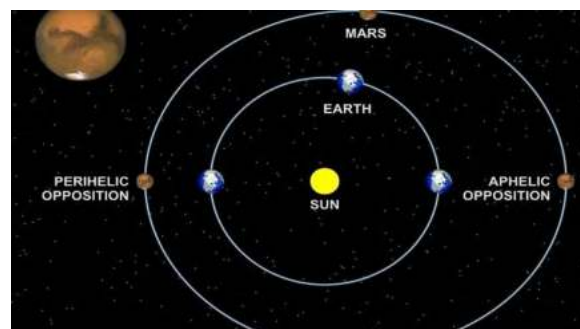

MARS OPPOSITION

GS-III SCIENCE & TECHNOLOGY

Context
- Mars reached opposition on Oct. 13.

What is Mars Opposition?
- Mars and Earth both orbit the sun, but at different distances, and thus, different speeds.
- Every two years or so, Mars, Earth and the sun form a straight line during the course of their orbits, **with Earth in the middle — an event known as opposition.**
- It is the point when the outer planet is typically also at its closest distance to the Earth.
- As a result, the Red Planet appears bigger, brighter and redder than usual.
- Mars actually outshine Jupiter, becoming the third brightest object (moon and Venus are first and second, respectively) in the night sky.

But why is it called opposition?

- As per NASA, from an individual's perspective on the Earth, Mars rises in the east and after staying up all night, it sets in the west just as the sun rises in the east and sets in the west.
- Because from the perspective on Earth, the sun and Mars appear to be on the opposite sides of the sky, Mars is said to be in "opposition".
- Essentially, opposition is a reference to "opposing the sun" in the sky.

Why every two years?

- Mars orbits the sun at a greater distance than Earth and takes about 26 months to complete one orbit around the sun.
- Due to these different orbital speeds, Mars oppositions occur every two years or so.
- Mars's next close approach will happen on December 8, 2022, when the planet will be 62.07 km away from the Earth.

Note:

- ✓ Even so, the closest approach **does not mean** that Mars will appear to be the same size as that of the moon.
- ✓ Inner planets, Mercury and Venus cannot be in opposition to the Sun.

'SAVIOUR SIBLING' EXPERIMENT

Context
- India's first 'saviour sibling' experiment is a success, say doctors.

About
- Under this experiment a one-year-old sibling saved her brother's life who was suffering from Thalassemia by donating her bone marrow.

Thalassemia
- Thalaseemia is a chronic blood disorder.
- It is a genetic disorder due to which a patient cannot make enough hemoglobin found in Red Blood Cells (RBC's).
- This leads to anemia and patients need to aquire blood transfusions every two to three weeks to survive.
- Thalassemias are inherited disorders passed from parents to children through genes.

Thalassemia patients often suffer from
- ✓ Anemia
- ✓ Weak bones
- ✓ Delayed or slow growth
- ✓ Iron overload in the body
- ✓ Poor appetite
- ✓ Enlarged spleen or liver
- ✓ Pale skin

There are two main types of thalassemia
- Alpha thalassemia occurs when a gene or genes related to the alpha globin protein are missing or changed (mutated).
- Beta thalassemia occurs when similar gene defects affect production of the beta globin protein.

Standard Treatments
- ✓ **Blood Transfusions**
- ✓ **Iron Chelation Therapy:** aims to balance the rate of iron accumulation from blood transfusion by increasing iron excretion in urine and or faces with chelators.
- ✓ **Folic Acid Supplements**
- ✓ **Blood and Marrow Stem Cell Transplant**

Facts and Figures
- India is the thalassaemia capital of the world with 40 million carriers and over 1,00,000 thalassaemia majors under blood transfusion every month.
- Over 1,00,000 patients across the country die before they turn 20 due to lack of access to treatment.
- The first case of thalassaemia in India was reported in 1938
- Every year 10,000 children with thalassaemia major are born in India.

OSIRIS Rex

Context
- After a four-year journey, NASA's robotic spacecraft OSIRIS-REx briefly touched down on asteroid Bennu's boulder-strewn surface to collect rock and dust samples.

OSIRIS-REx
- OSIRIS-REx (**Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer**) is a NASA asteroid-study and sample-return mission.

O – Origins
Return and analyze a sample of a pristine carbon-rich asteroid to study the nature, history, and distribution of its minerals and organic material.

SI – Spectral Interpretation
Define the global properties of a primitive carbon-rich asteroid to allow for direct comparison with existing ground-based telescopic data for all asteroids.

RI – Resource Identification
Map the global properties, chemistry, and mineralogy of a primitive carbon-rich asteroid to define its geologic and dynamic history and provide context for the returned sample.

S – Security
Measure the Yarkovsky effect* on a potentially hazardous asteroid and learn which asteroid properties contribute to this effect.
*a force caused by the emission of heat from a rotating asteroid that can change its orbit over time

REx – Regolith Explorer
Document the texture, morphology, geochemistry, and spectral properties of the regolith (surface material) at the sampling site.

- The mission's primary goal is to obtain a sample of at least 60 g from 101955 Bennu, a carbonaceous near-Earth asteroid.

Purpose

- The material returned is expected to enable scientists to learn more about
  - ✓ the formation and evolution of the Solar System,
  - ✓ its initial stages of planet formation, and
  - ✓ the source of organic compounds that led to the formation of life on Earth

Bennu

- 101955 Bennuis a **carbonaceous asteroid** in the Apollo group discovered by the **LINEAR Project** in1999.
- It is a **potentially hazardous object**.
- It has a cumulative 1-in-2,700 chance of impacting Earth between 2175 and 2199.
- Within 10 million years of our solar system's formation, Bennu's present-day composition was already established.
- Bennu likely broke off from a much larger carbon-rich asteroid about 700 million to 2 billion years ago.
- It formed in the Main Asteroid Belt between Mars and Jupiter, and has drifted much closer to Earth since then.
- Because its materials are so old, Bennu may contain organic molecules similar to those that could have been involved with the start of life on Earth.

> The Lincoln Near-Earth Asteroid Research (LINEAR) project is a collaboration of the United States Air Force, NASA, and the MIT's Lincoln Laboratory for the systematic detection and tracking of near-Earth objects. LINEAR was responsible for the majority of asteroid discoveries from 1998 until it was overtaken by the Catalina Sky Survey in 2005.

NATIONAL SUPERCOMPUTING MISSION (NSM) / GS-III SCIENCE & TECHNOLOGY

Context

- The third part of the **National Supercomputing Mission (NSM)** wills kick start in January- Department of Science and Technology.

About NSM

- It is a first of its kind Mission to boost the country's computing power.
- The mission was set up to provide the country with supercomputing infrastructure to meet the increasing computational demands of academia, researchers, MSMEs, and startups by creating the capability design, manufacturing, of supercomputers indigenously in India.

Agencies involved

- The National Super Computing Mission is steered jointly by the **Ministry of Electronics and IT (MeitY) and Department of Science and Technology (DST).**
- It is being implemented by the **Centre for Development of Advanced Computing (C-DAC),** Pune and **the Indian Institute of Science (IISc**), Bengaluru.

Target

- The target of the mission was set to establish a network of supercomputers ranging from a few Tera Flops (TF) to Hundreds of Tera Flops (TF).
- Plus, three systems with greater than or equal to 3 Peta Flops (PF) in academic and research institutions of National importance across the country by 2022.

Supercomupters

- Supercomputer, are a class of extremely powerful computers.
- They refer to the fastest high-performance systems available at any given time.
- Such computers have been used primarily for scientific and engineering work requiring exceedingly high-speed computations.
- Common applications for supercomputers include testing mathematical models for complex physical phenomena or designs, such as climate and weather, evolution of the cosmos, nuclear weapons and reactors, new chemical compounds (especially for pharmaceutical purposes), and cryptology.

Supercomputers in India

- As of June 2020, India is ranked 23rd in the world in terms of number of supercomputers.
- Cray XC40-based Pratyush is the fastest supercomputer in India. Mihir ranks 67 in the world.
- The first supercomputer of India assembled indigenously, called Param Shivay, was installed in IIT (BHU).
- 11 new systems are likely to be set up soon. By 2022, the government aims to install 73 indigenous supercomputers across the country.

Petaflop

- A petaflop is the ability of a computer to do one quadrillion floating point operations per second (FLOPS).
  - ✓ Floating-point numbers have decimal points in them. The number 2.0 is a floating-point number because it has a decimal in it. The number 2 (without a decimal point) is a binary integer.
  - ✓ Specific to floating-point numbers, a floating-point operation is any mathematical operation (such as +, -, *, /) or assignment that involves floating-point numbers (as opposed to binary integer operations).
- Pratyush and Mihir are the fastest supercomputer in India with a maximum speed of 6.8 PetaFlops
- The world's fastest supercomputer today, Titan, is capable of 20 petaflops.
- One petaFLOPS is equal to one thousand teraFLOPS.

ROOM TEMPERATURE SUPERCONDUCTER / GS-III SCIENCE & TECHNOLOGY

Context

- Scientists have reported the discovery of the first room-temperature superconductor, after more than a century of waiting.

Superconductor

- A superconductor is a substance that **conducts electricity without resistance** when it becomes colder than a "critical temperature."
- At this temperature, electrons can move freely through the material.
- This means heat, sound or any other form of energy would not be released from the material when it has reached "critical temperature" (Tc), or the temperature at which the material becomes superconductive.
- Superconductors are different from ordinary conductors.
- Ordinary conductors lose their resistance slowly as they get colder. In contrast, superconductors lose their resistance all at once.
- This is an example of a phase transition. High magnetic fields destroy superconductivity and restore the normal conducting state.
- Prominent examples of superconductors include aluminium, niobium, magnesium diboride, cuprates such as yttrium barium copper oxide and iron pnictides.

About the Room Temperature Superconductor

- This superconductor was produced by squeezing carbon, hydrogen and sulfur between the tips of two diamonds and hitting the material with laser light to induce chemical reactions.
- At a pressure about 2.6 million times that of Earth's atmosphere, and temperatures below about 15° C, the electrical resistance vanished.
- The material is superconducting below temperatures of about 15° Celsius (59° Fahrenheit).
- However, the new material's superconducting superpowers appear only at extremely high pressures, limiting its practical usefulness.

Significance

- All superconductors previously discovered must be cooled, many of them to very low temperatures, making them impractical for most uses.
- This would not be the case anymore.

Applications of Supercomputers

Energy	Defense	Transportation	Industrial	Medical	Science/Research
• Cables • FCLs • Generators • Transformers • SMES • Fusion Reactors	• Motors • Cables	• Maglev • Motors	• Induction Heaters • Motors • Generators • Magnetic Separation • Bearings	• MRI • Particle Therapy • Current Leads	• HF Magnets • NMR • Accelerators • Neutron and X-ray Scattering • Undulators

SATELLITE EOS 01

GS-III   SCIENCE & TECHNOLOGY

Context
- Recently, India's Polar Satellite Launch Vehicle (PSLV C-49) successfully launched its latest earth observation satellite EOS-01 and nine customer satellites from Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota.

Details
- EOS-01 is an earth observation satellite, intended for applications in **agriculture, forestry and disaster management support.**
- The nine other customer satellites from Lithuania (1), Luxembourg (4) and USA (4) were launched under a commercial arrangement with New Space India Limited (NSIL).
- EOS-01 is nothing but another **Radar Imaging Satellite (RISAT)** that will work together with RISAT-2B and RISAT-2BR1 launched last year

ISRO's new naming system
- EOS-01 was initially named RISAT-2BR2, and was supposed to be the third of the three-spacecraft constellation. It aimed at providing all-weather round-the-clock service for high-resolution images.
- With EOS-01, ISRO is moving to a new naming system for its earth observation satellites.
- Earlier satellites were named thematically, according to the purpose they are meant for.
- For example, the Cartosat series of satellites were meant to provide data for land topography and mapping,
- Oceansat satellites were meant for observations over sea.
- Some INSAT-series, Resourcesat series, GISAT, Scatsat etc are all earth observation satellites.
- Henceforth, all the earth observation satellites would be called EOS-series.

RISAT (Radar Imaging Satellite)
- RISAT is a series of Indian radar imaging satellites built by ISRO.
- They provide all-weather surveillance using synthetic aperture radars (SAR).
- The RISAT series are the first all-weather Earth observation satellites from ISRO.
- Previous Indian observation satellites relied primarily on optical and spectral sensors which were hampered by cloud cover.
- Post 2008 Mumbai attacks RISAT-2 were launched before RISAT-1 and it used SAR sensor of Israel Aerospace.
- The satellite is used for border surveillance, to deter insurgent infiltration and for anti-terrorist operations.

Note: Synthetic aperture radar is a way of creating an image using radio waves. The radio waves used in SAR typically range from approximately 3 cm up to a few meters in wavelength, which is much longer than the wavelength of visible light, used in making optical images. It creates two-dimensional images or three-dimensional reconstructions of objects, such as landscapes.

Types of Earth orbit

by inclination

plane through Equator
satellite orbit
satellite track over Equator
Earth's rotation

equatorial orbit

plane through Earth's axis
satellite orbit
satellite track covering all parts of Earth as planet rotates

polar orbit

plane inclined at some angle to Equator
satellite orbit
satellite track covering a range of latitudes in Northern and Southern hemispheres

inclined orbit

by shape

Earth at centre
all points of satellite orbit at about the same altitude

circular orbit

Earth at one focus of ellipse
apogee (farthest distance)
perigee (closest distance)

elliptical orbit

by altitude

about 160–2,000 km (100–1,200 miles) altitude

low Earth orbit (LEO)

5,000–10,000 km (3,100–6,200 miles) altitude (typical)

medium Earth orbit (MEO)

35,800 km (22,300 miles) altitude
orbital period of satellite equal to rotational period of Earth
satellite orbit in equatorial plane

geostationary orbit (GEO)

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Types of satellites launched by ISRO

1. Communications Satellite
2. Remote Sensing Satellite
3. Navigation Satellite
4. Geocentric Orbit type satellites(LEO, MEO, HEO)
5. Global Positioning System (GPS)
6. Geostationary Satellites (GEOs)
7. Drone Satellite, Ground Satellite
8. Polar Satellite, Nano Satellites
9. CubeSats and SmallSats.

Earth Observation Satellite/ remote Sensing

- Earth observation satellites are the satellites equipped with remote sensing technology.
  - ✓ Remote sensing is the process of detecting and monitoring the physical characteristics of an area by measuring its reflected and emitted radiation at a distance (typically from satellite or aircraft).
  - ✓ Special cameras collect remotely sensed images, which help researchers "sense" things about the Earth.
- Functions: Land and forest mapping and monitoring, mapping of resources like water or minerals or fishes, weather and climate observations, soil assessment, geospatial contour mapping are all done through earth-observation satellites.
- Various sensors are equipped on these satellites in accordance with their respective missions.

1. **Optical sensors**
   Vegetative conditions, ground surface temperatures, sea surface temperatures, ground elevation, cloud conditions, water distribution.

2. **Active microwave sensor**
   Vegetative conditions, ground elevation, cloud conditions, water distribution

3. **Passive microwave sensor**
   Ground surface temperatures, sea surface temperatures, cloud conditions.

New Space India Limited (NSIL) is a Central Public Sector Enterprise of Government of India and commercial arm of ISRO. It was established on 6 March 2019 under the administrative control of Department of Space (DOS) and the Company Act 2013. The main objective of NSIL is to scale up industry participation in Indian space programmes.

CHINA'S CLIMATE COMMITMENT

Context

- Chinese President Xi Jinping has promised China would be **carbon net-zero by 2060**, and apparently advanced the deadline for reaching emissions peak.

> **Carbon net-zero**
> - Net-zero is a state in which a country's **emissions are compensated by absorptions** and removal of greenhouse gases from the atmosphere.
> - Absorption can be increased by creating more **carbon sinks** such as forests, while removal involves application of technologies such as carbon capture and storage.

What has China announced?

- China would become carbon net-zero by the year 2060.
- China's would try to achieve already committed target for letting its emissions "peak", from "by 2030" to "before 2030".
- China would not allow its greenhouse gas emissions to grow beyond that point.

Why is net-zero an important target?

- There has been a concerted campaign to get countries to achieve "climate neutrality" by 2050.
- The state of net-zero emissions would require countries to significantly reduce their emissions, while increasing land or forest sinks that would absorb the emissions.
- If the sinks are not adequate, countries can commit themselves to deploying technologies that physically remove greenhouse gases from the atmosphere.
- Most of such carbon dioxide removal technologies are still unproven and extremely expensive.
- Thus, global carbon neutrality by 2050 is the only way to achieve the **Paris Agreement target of keeping global temperatures from rising beyond 2°C compared to pre-industrial times.**
- At the current rate of emissions, the world is headed for a 3° to 4°C rise in temperatures by 2100.

How significant is China's commitment?

- China is the world's **largest emitter of greenhouse gases**.
- China's decision is a big shot in the arm for the success of Paris Agreement.
- According to Climate Action Tracker, a global group the Chinese goal, if realised, would lower global warming projections for 2100 by about 0.2° to 0.3°C.
- It accounts for almost 30% of global emissions, more than the combined emissions in the United States, the European Union and India, the three next biggest emitters.
- So far, the **European Union** was the only big emitter to have committed itself to a net-zero emission status by 2050.
- The real heavyweights whose climate actions are crucial to achieving the Paris Agreement targets are **the Big Four — China, the US, the European Union and India** — who together account for more than half the global emissions, followed by countries such as Russia, Brazil, South Africa, Japan and Australia.
- **South Africa** too declared its intention to become carbon-neutral by 2050, but other countries have been holding back.

Fig: Greenhouse gas emission

- The **United States**, has walked out of the Paris Agreement, and does not even believe in these targets.
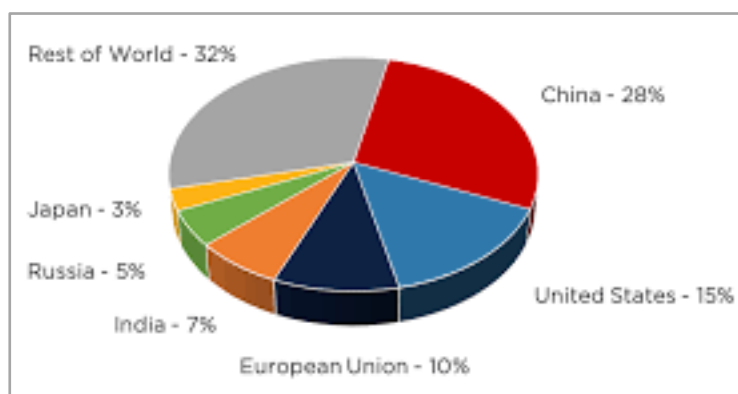
What is India's commitment?

- India has resisted pressure to make a long-term commitment, citing the fact that developed countries had failed in keeping their past promises and never delivered on the commitments they made earlier.
- India has also been arguing that the climate change actions it has been taking are far more robust than those of the developed countries.

What are the implications of China's commitment for India?

- The Chinese announcement is expected to increase pressure on India to follow suit, and agree to some long-term commitment even if it was not exactly 2050 net-zero goal.
- It is an unfair demand, asin the Paris Agreement itself India is the only G20 country whose actions are on track to meet the 2° goal.

- The other developed countries actually have to make efforts towards a 1.5° world, but they are failing even to do enough to meet the 2° target.
- As per the Climate Action Tracker, India's actions as "2°C compatible", while the US, China and even the European Union's current efforts are classified as "insufficient".
- Chinese decision could increase divergence in the positions of India and China at the climate negotiations.
- China might now have fewer grounds to align itself with India as a developing country.

PUSA DECOMPOSER

GS-III ENVIRONMENT

Context
- Indian Agriculture Research Institute (IARI) has developed 'decomposer' capsules.
- When mixed in a water solution and sprayed on land, it soften and decompose paddy subtle to the extent that it can mix with soil and act as compost.
- Theoretically, it does away with the reason farmers set fire to fields ahead of the rabi sowing.

What was the need?
- Satellite remote sensing data from the IARI show a **five-fold increase in the numberof farm fires** in Punjab, Haryana, and Uttar Pradesh during the first six days of October compared to the corresponding dates in 2019.
- The SAFAR-India short-range forecast mostly rate Air Quality of Delhi as **moderate to the poor category in the Air Quality Index.**
- The burning of paddy stubble has been a cause of concern for the past several years as it contributes to air pollution in the northern Gangetic plains.

What is the 'Pusa Decomposer'?
- It is essentially a **fungi-based** liquid solution that can soften hard stubble to the extent that it can be easily mixed with soil in the field to act as compost.
- This would then rule out the need to burn the stubble, and also help in retaining the essential microbes and nutrients in soil that are otherwise damaged when the residue is burned.
- These seven strains of fungi are packed into four capsules, which cost about Rs 20 per pack of four.

How does the decomposer work?
- The window of time required for the solution to work, which is currently the main concern of farmers, is around 20 to 25 days.
- The process for developing the liquid solution from these capsules starts with boiling 25 litres of water mixed with 150 grams of jaggery, 50 grams of gram flour is added to it along with four 'Pusa Decomposer' capsules.
- A 25-litre solution is advisable for use in one hectare of land after being mixed with 500 litres of water.
- It can be sprayed over the field and left to do its work.
- Decomposer will be used on a trial basis this year in Punjab, Haryana, Uttar Pradesh and Delhi.
- This technology is inexpensive, as the whole process — from development, transport and spraying of decomposer — is costing the government only Rs 20 lakh.

TRANSLOCATION OF CORALS IN MUMBAI

GS-III ENVIRONMENT

Context
- Small colonies of the marine animals who live along Mumbai's coastline will be translocated to make way for the Coastal Road project.

What are corals?
- Corals exhibit characteristics of plants, but are marine animals that are related to jellyfish and anemones.
- Coral polyps are tiny, soft-bodied organisms. At their base is a hard, protective limestone skeleton called a calicle, which forms the structure of coral reefs.
- Reefs begin when a polyp attaches itself to a rock on the seafloor, then divides, or buds, into thousands of clones.
- The polyp calicles connect to one another, creating a colony that acts as a single organism.
- As colonies grow over hundreds and thousands of years, they join with other colonies, and become reefs.
- There are soft corals as well, which are non-reef-building, and resemble bushes, grasses, trees.

Where are these corals in Mumbai?

- The Mumbai coast hosts a tiny population of corals.
- The corals found across rocky patches along the Mumbai coastline are mostly fast-growing and non-reef building corals.

How are corals translocated?

- The translocation of corals is at a nascent stage along the Indian coastline.
- Pilot projects at the Lakshadweep islands, and off the coast of Kutch and Tamil Nadu have been undertaken to study the survival rate, method and site of translocation, and creation of high heat-resistant coral colonies, etc.
- Fragments of corals were taken and attached to concrete frames with the help of nylon threads — and then left on ocean beds at a depth suitable for their growth.

How fast do corals grow?

- The rate at which corals grow depends on the species.
- Some of the branching species can increase in height or length by as much as 10 cm a year (about the same rate at which human hair grows).
- A soft coral colony has the potential to grow at the rate of 2 cm to 4 cm per year.

Factors which determine the survival rate of translocated corals

- For a high survival rate, it is important to translocate corals in a place with similar environmental characteristics such as depth, current flow, amount of light, and pressure.

Why are coral reefs important?

- Coral reefs are like underwater cities that **support marine life**.
- According to the UN Environment programme, they provide at least half a billion people around the world with **food security and livelihoods**.
- Coral reefs also **act as 'wave breaks'** between the sea and the coastline and **minimize the impact of sea erosion.**
- In India, they are protected in the same way as the tiger or elephant, under **Schedule I of the Wildlife Protection Act (WPA), 1972.**

What poses a threat to coral reefs?

- **Climate change** remains one of the biggest threats to corals.
- This threat has been visible in the "**bleaching**" of corals.
  - Bleaching is a process during which corals, under stress from warm weather, expel the algae that give corals their brilliant colours and live in their tissues and produce their food.
- The Great Barrier Reef off the coast of Australia, a UNESCO World Heritage site and home to one of the largest collections of coral reefs on the planet, has suffered six mass bleaching events due to warmer than normal ocean temperatures: in 1998, 2002, 2006, 2016, 2017, and now 2020.

STATE OF GLOBAL AIR 2020: HEI
GS-III   ENVIRONMENT

Context

- The State of Global Air 2020, report released.
- SOGA, released by US-based Health Effects Institute and Global Burden of Disease (GBD).
- It uses both data from ground monitors and satellite to make their assessments.

Key Findings

- India has been recording an increase in PM 2.5 pollution since 2010 contrary to Centre's claims that annual air pollution levels are reducing in the country.
- India was followed by Nepal, Niger, Qatar and Nigeria in high PM 2.5 exposures. T
- It means people in India are exposed to the highest PM 2.5 concentrations globally.
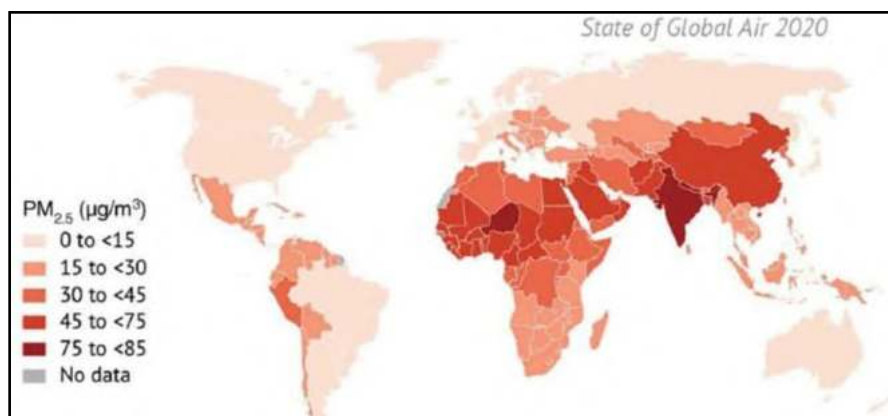
Fig.1 Global map of population-weighted annual average PM2.5 concentrations in 2019.

- Out of 87 health risk factors based on total number of deaths caused in 2019 assessed by the team, air pollution has the fourth highest risk globally preceded by high systolic blood pressure, tobacco and dietary risks.
- But in India, air pollution is the highest risk factor because of the huge burden of premature deaths it contributes to.
- India is also among the top ten countries with highest ozone (O3) exposure in 2019. Qatar recorded the highest O3 exposure followed by Nepal and India.
- Among the 20 most populous countries, India recorded the highest increase (17%) in O3 concentrations in the past ten years.

Major Pollutants

- O3 is a major respiratory irritant, which is not released directly into the air but is formed in a complex chemical interaction between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the presence of sunlight.

- NOx is emitted from the burning of fossil fuels (oil, gas, and coal) in motor vehicles, power plants, industrial boilers, and home heating systems.
- Volatile organic compounds are also emitted by motor vehicles, as well as by oil and gas extraction and processing and other industrial activities.

Air pollution in India

- It is a serious health issue.
- Of the most polluted cities in the world, 21 out of 30 were in India in 2019.
- Air pollution contributes to the premature deaths of 2 million Indians every year.
- India has a low per capita emissions of greenhouse gases but the country as a whole is the third largest greenhouse gas producer after China and the United States.
- The Air (Prevention and Control of Pollution) Act regulate air pollution but has failed to reduce pollution because of poor enforcement of the rules.
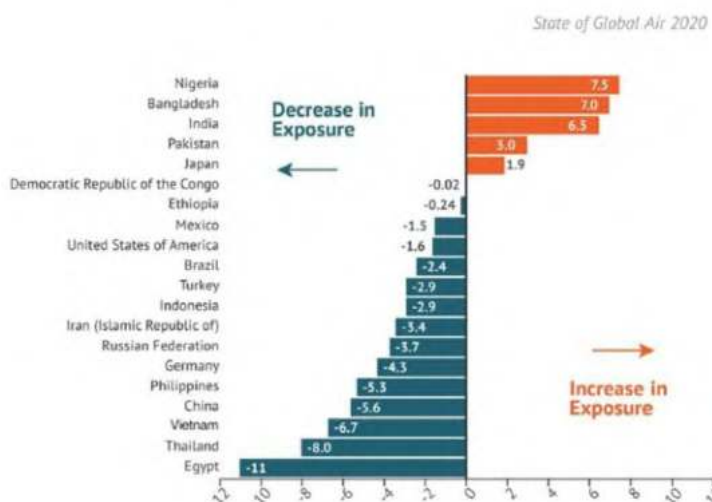
Fig 2: Change in population-weighted annual average PM2.5 exposure in the 20 most populous countries, 2010-2019.

Sources of Air Pollution in India
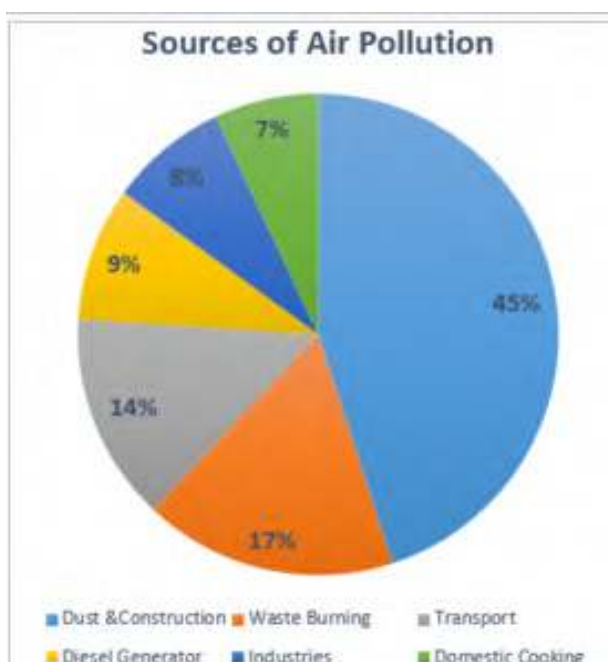
Measure taken

- In 2015, Government of India, together with IIT Kanpur launched the National Air Quality Index.
- In 2019, India launched 'The National Clean Air Programme' with tentative national target of 20%-30% reduction in PM2.5 and PM10 concentrations by 2024, considering 2017 as the base year for comparison.
- The Pradhan Mantri Ujjwala Yojana Household LPG programme and other schemes have helped to dramatically expand access to clean energy, especially for rural households.
- Introduction of BS-VI emission standards are steps towards improving air quality.
- Construction of 1,600-kilometre-long and 5-kilometre-wide The Great Green Wall of Aravalli green ecological corridor along Aravalli range from Gujarat to Delhi which will also connect to Shivalik hill range with planting of 1.35 billion new native trees over 10 years to combat the pollution.
- Given the high exposure and staggering health burden of air pollution, India must show urgency and recognise air pollution as a regional-scale problem.
- It is critical that the efforts are continued and expanded over the next few years in order to see improvements in air quality. This will require concerted action at both at the national and state and local levels.

What can be done to advocate better air quality?

ENVIRONMENTAL CLEARANCE

GS-III   ENVIRONMENT

Context

- National Green Tribunal has directed the Telangana government to stop Kaleshwaram lift irrigation project.

What is the issue?

- Environmental clearance (EC) granted to it is declared ex post facto (retroactive, after it is done) and illegal.
- It has directed the state government to obtain forest clearance before moving ahead with the project.

Kaleshwaram Multipurpose Lift Irrigation Project

- It is the world's largest irrigation and drinking water system, is meant to provide water for drinking and irrigation to nearly 45 lakh acres in 20 of 31 districts of Telangana, apart from Hyderabad and Secunderabad.
- The lift irrigation scheme involves submergence of approximately 32,000 hectares of land, 3211.2974 hectares of forest land in Telangana.
- The Tribunal observed that there were two legal issues confronting Telangana.
  - First, the Kaleshwaram Lift Irrigation Project is primarily an irrigation project.
  - Second is about Forest Clearance.

About NGT

- The National Green Tribunal Act, 2010 is an **Act of the Parliament of India which enables creation of a special tribunal to handle the expeditious disposal of the cases pertaining to environmental issues.**

- It draws inspiration from the India's **constitutional provision of (Constitution of India/Part III) Article 21 Protection of life and personal liberty**, which assures the citizens of India the right to a healthy environment. Powers

- **Power:** The NGT has the power to hear **all civil cases** relating to environmental issues and questions that are linked to the implementation of laws listed in Schedule I of the NGT Act. These include the following:

THE MIGHTINESS OF KALESHWARAM

PROPOSED TO IRRIGATE 36L ACRES, INCLUDING 18L ACRES NEW AYACUT AND 18L ACRES STABILISATION OF EXISTING AYACUT	₹80,000 cr Project cost	1,832 km Total length	1,531 km Total gravity canal	203 km Tunnel length	98 km Pressure pipe line
	First pumping at Medigadda likely to start in July	20 Total lifts	19 Total pump houses	88 Total pumps	4,62,724 MW Power requirement
		20 New reservoirs	5 Old and excising reservoirs	147.71 TMC ft Live storage	

OTHER SALIENT FEATURES

- ► Godavri river will be filled with water due to continuous pumping & through reverse pumping, Godavari water can be utilised
- ► Land acquisition is limited due to underground pumping stations, tunnels & use of existing reservoirs
- ► Has world's largest underground pumping station with 81 km tunnel. It carries 2 TMC ft water continuously
- ► World's biggest package 8 pump house coming up with 139 MW capacity & in all, seven such units are envisaged

- 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.

- Importantly, the NGT has **not been** vested with powers to hear any matter relating to the **Wildlife (Protection) Act, 1972, the Indian Forest Act, 1927** and various laws enacted by States relating to forests, tree preservation etc. Therefore, specific and substantial issues related to these laws cannot be raised before the NGT.

- **Principles of Justice adopted by NGT:** The NGT is not bound by the procedure laid down under the Code of Civil Procedure, 1908, but shall be **guided by principles of natural justice**. Further, NGT is also **not bound by the rules of evidence** as enshrined in the Indian Evidence Act, 1872.

- The Chairperson of the NGT is a retired Judge of the Supreme Court, Head Quartered in Delhi. Other Judicial members are retired Judges of High Courts. Each bench of the NGT will comprise of at least one Judicial Member and one Expert Member.

RIGHT OF PASSAGE OF THE ANIMALS   *GS-III ENVIRONMENT*

Context

- The Supreme Court (SC) upheld a 2011 order of the Madras High Court (HC) on the Nilgiris elephant corridor, affirming the right of passage of the animals and the closure of resorts in the area.

Madras High Court (HC) verdict

- The Madras HC in July 2011, declared that the **Tamil Nadu government** was fully empowered under the 'Project Elephant' of the Union government as well as **Article 51 A (g)** of the Constitution to notify the elephant corridor in the state's Nilgiris district.
  - **Article 51-A (g)** which deals with Fundamental Duties of the citizens states: "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures."

- The elephant corridor is situated near the **Mudumalai National Park** in the Nilgris district.

Project Elephant
- This **centrally sponsored scheme**, was launched in February 1992
- **Aim:**
  to provide financial and technical support to major elephant bearing States in the country for protection of elephants, their habitats and corridors.
  to ensure the **long-term survival to the populations of elephants in their natural habitats by protecting the elephants, their habitats and migration corridors.**
- It also seeks to address the issues of **human-elephant conflict and welfare of domesticated elephants.**
- The Project is being implemented in 16 States / UTs, viz. Andhra pradesh , Arunachal Pradesh, Assam, Jharkhand , Karnataka , Kerala , Meghalaya , Nagaland , Orissa , Tamil Nadu , Uttranchal , Uttar Pradesh and West Bengal.
- Other goals of Project Elephant are supporting the research of the ecology and management of elephants, creating awareness of conservation among local people, providing improved veterinary care for captive elephants.
- Project Elephant has been **formally implementing MIKE** (Monitoring of Illegal Killing of Elephants) programme of CITES in 10 ERs (Elephant Reserve) since January 2004. It is mandated by COP resolution of CITES.

SAVE THE TUSKERS

➤ Project Elephant launched in 1992

➤ The scheme is run by both the governments sharing the fund, where in the Centre takes care of **60%** and state takes into account **40%**

➤ The scheme is applicable to **16 states** including Andhra Pradesh

➤ India has **32 elephant** reserves

➤ AP has only one reserve

➤ AP has around **90 elephants**

➤ North Andhra has **10 elephants** while Rayalaseema has **80 elephants**

"With meagre funds from the government we can provide only drinking water at the RER. These reserve forests can be a boost to tourism too but before that, they need to be developed

Tammineni Chakrapani |
RAYALA ELEPHANT RESERVE

Supreme Court order
- The Supreme Court dismissed the special leave petition filed against the 2011 Judgment of the Madras HC.
- The court allowed formation of a committee to hear the individual objections of private landowners within the corridor space.
- It upheld that the area was a fragile ecosystem, the will of men must give way to elephants.
- In August 2018, SC had directed the Tamil Nadu government to seal or close 11 hotels and resorts constructed on the elephant corridor in the Nilgiri Hills in violation of the law, within the next 48 hours.

Mudumalai National Park
- It is also declared as a tiger reserve.
- It lies on the northwestern side of the Nilgiri Hills (Blue Mountains) in Tamil Nadu, India.
- It shares its boundaries with the states of Karnataka and Kerala.
- It is home to several endangered and vulnerable species including Indian elephant, Bengal tiger, gaur and Indian leopard.
- There are at least 266 species of birds in the sanctuary, including critically endangered Indian white-rumped vulture and long-billed vulture.
- It is under consideration by the UNESCO World Heritage Committee for selection as a World Heritage Site.

COMMISSION FOR AIR QUALITY MANAGEMENT   *GS-III ENVIRONMENT*

Context
- Dissolving the 22-year-old Environmental Pollution (Prevention and Control) Authority (EPCA) that has so far addressed air pollution in Delhi, the Centre has constituted a "permanent" body — the Commission for Air Quality Management in National Capital Region and Adjoining Areas.
- As the quality of air is deteriorating in the Delhi-NCR, the Central government introduced a new law through an ordinance that puts in place a powerful oversight body.
- The ordinance may be called the Commission for Air Quality Management In National Capital Region and Adjoining Areas Ordinance 2020.

Need
- In tackling air pollution in Delhi and the surrounding region, there has been the inability of agencies such as the CPCB and the EPCA to consistently enforce rules on the ground.
- Stubble burning or prevent pollution from thermal plants do exist, but these are often not strongly enforced always in States due to political considerations.

Ordinance will be applicable
- It shall apply to national capital region and also adjoining areas so far as it relates to matters concerning air pollution in the NCR

- Adjoining areas where it shall be in force include Punjab, Haryana, Rajasthan and Uttar Pradesh, adjoining areas of the NCR and Delhi where any source of pollution is located and is causing adverse impact on air quality in the national capital region.

What is the Role of New Commission?

- It has been established to check pollution in the neighbouring areas, which cause pollution in the capital.
- The commission will take stern action against violators of the ordinance.
- They can be penalised heavily and even suffer a sentence of five years.

Special powers

- It will have the power to lay down parameters of air

NEW BOSS TO FIGHT BAD AIR

BEFORE CENTRAL BODY, WHO?
EPCA
➤ Supreme Court-backed Environment Pollution (Prevention and Control) Authority on the job since 1998
➤ Mandated to protect and improve quality of environment
➤ Assisted SC in matters related to noise pollution, hazardous waste, etc, too
➤ Drew power from the Environment (Protection) Act, 1986, and implemented various mitigation measures through CPCB

OTHERS
➤ Several committees and task forces - both at Centre and NCR states - dealt with air pollution
➤ Union environment ministry worked as a coordination body
➤ High-level task force, led by principal secretary to PM, reviewed action taken

EPCA and all such committees now stand dissolved with the ordinance
The issue will now be handled by a powerful statutory authority - Commission For Air Quality Management in NCR and Adjoining Areas

COMMISSION TO ADDRESS THREE BROAD ISSUES
Monitoring of air pollution
Research and innovation
Enforcement of laws after such monitoring

COMMISSION TO HAVE CHAIRPERSON PLUS 17 MEMBERS
Key Functions | Take mitigation measures through central/state agencies

Entertain complaints for protecting and improving air quality | Regulate or prohibit activities that may cause or increase air pollution | Lay down parameters for air quality and for emissions or discharge of pollutants | Restrict industrial operation that may cause air pollution

DIRECT CLOSURE OF POLLUTING INDUSTRIES | STOP OR REGULATE SUPPLY OF WATER OR ELECTRICITY TO ERRING INDUSTRIES

CPCB AND SPCBS WILL CONTINUE TO DEAL WITH AIR POLLUTION. HOWEVER, THE COMMISSION'S ORDERS PREVAIL IN CASE OF CONFLICT

PENALTY PROVISIONS
➤ Non-compliance punishable with a jail term up to 5 years or fine up to Rs 1 crore, or both
➤ Appeal can be made only before NGT

quality, parameters of discharge of environmental pollutants, to inspect premises violating the law, ordering closure of non-abiding industries/plants etc.

- It can restrict any industry, operations or processes or class of industries that may have implications on air quality in the region.
- Orders of the commission shall prevail in case there is a conflict between the central pollution control board and the state pollution control boards.
- It may take up matter suo motu or on the basis of complaints, any appeal against any direction of the panel shall lie only with the National Green Tribunal.
- Commission would be empowered to constitute special investigative groups for stricter implementation.

Composition of commission

- The members of the commission include a
  - chairperson, who is or has been the secretary of Government of India or chief secretary of a state,
  - representative of environment secretary and
  - five ex-officio members who are either chief secretaries or secretaries in charge of the environment department of Delhi, Punjab, Haryana, Rajasthan and Uttar Pradesh.
  - two full-time members who have been joint secretaries to the central government,
  - three full-time independent technical members who have specific scientific knowledge regarding air pollution,
  - one technical member from Central Pollution Control Board (CPCB),
  - one technical member nominated by ISRO and
  - three members of NGOs having experience in matters concerning combating of air pollution.
- The commission will have three sub-committees, one each for monitoring and identification, safeguarding and enforcement, and research and development.
- Encompassing Delhi, Punjab, Rajasthan, Haryana and Uttar Pradesh, the all-powerful body assumes several powers to coordinate action among States, levy fines — ranging up to ₹1 crore or five years of prison — to address air pollution.
- There will be at least six permanent members and it will be headed by a former or incumbent Secretary to the Government of India, or a Chief Secretary to a State government.
- It has members from several Ministries as well as representatives from the States.

New commission and states

- The Central Pollution Control Board (CPCB) and its State branches have the powers to implement provisions of the Environment Protection Act for air, water and land pollution.

- Their powers continue. However, in case of dispute or a clash of jurisdictions, the Commission's writ will prevail specific to matters concerning air pollution.

Criticism

- Commission is considered as a "bureaucratic vessel", as it was created practically overnight, with no discussion and input.
- **Lack of diversity in representation:** Only three members representing NGOs have been included, majority are Ministries which are engaged in actions which contribute towards pollution — the Ministry of Power, Housing and Urban Affairs; Road Transport and Highways; Petroleum and Natural Gas.

Challenges ahead

- The major issue with the ordinance will be when it comes to implementation, as EPCA had almost similar powers but failed miserably in cleaning the air even after being in force for more than 20 years.
- Whether it's a positive move or just a distraction and wasteful exercise will be decided on the fact whether the ordinance changes the status quo when it comes to ground implementation and strict action on polluters or not,"

Way forward

- There is need to ensure that these members have the capability to bind together the States into air quality solutions that can and will solve our air quality problems.

NAG MISSILE: ANTI TANK GUIDED MISSILE

GS-III   SECURITY

Context
- The Defence Research and Development Organization (DRDO) carried out the final user trial of the 3rd generation Anti-Tank Guided Missile (ATGM), Nag, at the Pokhran firing range.

About Nag missile
- It is also called "Prospina" for the land-attack version.
- It is an Indian **third-generation**, all-weather, **fire-and-forget**, lock-on after launch, anti-tank guided missile (ATGM).
- Development of the Nag is part of the **Integrated Guided Missile Development Program (IGMDP)**, run by Defence Research and Development Organisation (DRDO).
- It is manufactured by Bharat Dynamics Limited (BDL).
- The Nag missile has been developed to strike and neutralise highly fortified enemy tanks.
- It also has night strike capabilities.
- It has a minimum range of **500 metres** and maximum range of **four kilometres**.
- Nag uses an imaging infra-red seeker to lock on to the target before launch.
- It is fit for deployment across India's frontiers in both eastern and western theatre.
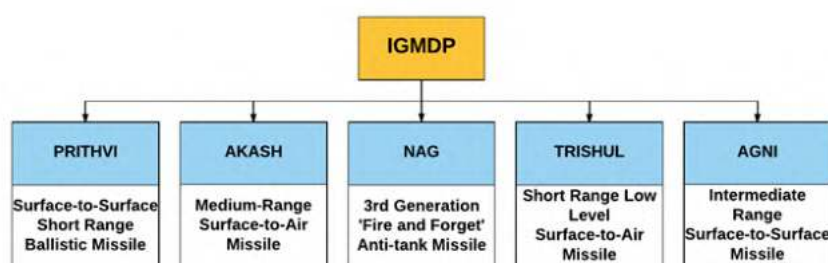
Integrated Guided Missile Development Programme (IGMDP)
- It was an Indian Ministry of Defence programme for the research and development of the comprehensive range of missiles.
- The programme was managed by the Defence Research and Development Organisation (DRDO) and Ordnance Factories Board in partnership with other Indian government political organisations.
- The project started in 1982–83 under the leadership of Abdul Kalam.
- In 2008, the DRDO formally announced the successful completion of the IGMDP.

The Nag has following variants that are under development
- A land version, for a mast-mounted system; the helicopter-launched Nag (**HELINA**);
- A "man-portable" version (MPATGM);
- An air-launched version (which will replace the current imaging infra-red (IIR) to millimetric-wave (mmW) active radar homing seeker; and
- The Nag Missile Carrier (**NAMICA**) "tank buster".
- **SANT or Standoff Anti-tank Guided Missile** is a fourth generation upgraded variant of HELINA missile developed for long distance airborne anti-armour role.

BRAHMOS TESTING

GS-III   SECURITY

Context
- A naval version of the BrahMos supersonic cruise missile was successfully test-fired from an indigenously built stealth destroyer of the Indian Navy in the Arabian Sea.

About BrahMos
- The BrahMos (designated PJ-10) is a medium-range **ramjet supersonic cruise missile** that can be launched from submarine, ships, aircraft, or land.
- It is a joint venture between the Russian Federation's NPO Mashinostroyeniya and India's Defence Research and Development Organisation (DRDO), who together have formed BrahMos Aerospace.
- It is the **world's fastest anti-ship cruise missile** in operation.
- The land-launched and ship-launched versions are already in service.

- In 2016, as India became a member of the **Missile Technology Control Regime** (MTCR), India and Russia are now planning to jointly develop a new generation of Brahmos missiles with 600 km-plus range and an ability to hit protected targets with pinpoint accuracy.
- In 2019, India upgraded the missile with a new range of 500 km.

INDIA COMPLETES MISSILE TRIAD
Air variant of BrahMos missile test-fired from a Sukhoi-30MKI fighter jet to hit a sea-based target in the Bay of Bengal. A snapshot:

Strike range
290 km

Speed
Mach 2.8
2.8 times the speed of sound

Weight
2.5 tonnes
Air Force variant

Can be launched from
Air
A missile is carried at the belly of the aircraft
Land
Sea/water
3 TONNES: Weight of Navy and Army variants
"Such a capability can be a game changer for any air force in the world"
SUDHIR MISHRA, CEO, BrahMos Aerospace

■ **The missile launch** PTI
Boosting India's aerial prowess
- It is the world's fastest supersonic cruise missile, from land, sea and air, completing the country's tactical cruise missile triad
- It is the heaviest weapon to be deployed on India's Su-30
- The reach of Sukhoi-30 jets and Brahmos' accuracy gives India a dominant position

Missile Technology Control Regime (MTCR)
- It is a multilateral export control regime.
- It is an **informal political understanding** among 35 member states that seek to limit the proliferation of missiles and missile technology.
- The regime was formed in 1987 by the **G-7** industrialized countries.
- It was created in order to curb the spread of unmanned delivery systems for nuclear weapons, specifically delivery systems that could carry a payload of **500 kg for a distance of 300 km.**
- It seeks to limit the risks of proliferation of weapons of mass destruction (WMD) by controlling exports of goods and technologies that could make a contribution to delivery systems (other than manned aircraft) for such weapons.
- The MTCR is not a treaty and **does not impose any legally binding obligations** on Partners (members).
- Rather, it is an informal political understanding among states that seek to limit the proliferation of **missiles and missile technology.**

MTCR members

SMART

GS-III   SECURITY

Context
- India successfully flight-tested its indigenously developed SMART torpedo system with the Defence Research and Development Organisation (DRDO) hailing it as a "game changer" in anti-submarine warfare.

What is SMART?
- SMART is a missile-assisted release of lightweight **Anti-Submarine Torpedo System** for Anti-Submarine Warfare (ASW) operations far beyond torpedo range.
- It takes off like a regular supersonic missile when launched from a warship or a truck-based coastal battery.
- Most of its flight in the air is covered at lower altitudes with two-way data link from the warship or an airborne submarine target detection system.
- It is also provided the exact location of the hostile submarine to correct its flight path midway.
- When it approaches close to a submerged submarine, the missile would eject the torpedo system into the water and the torpedo will start moving towards its target to hit the submarine.
- SMART system combines a solid fuel rocket with a lightweight torpedo (LWT) as its warhead.

Game-Changer Technology in Anti Submarine Warfare
DRDO Successfully Flight Test Indigenously developed SMART

- Supersonic Missile Assisted Release of Torpedo (SMART) successfully tested from Wheeler Island, Odisha
- It is a missile assisted release of lightweight Anti-Submarine Torpedo System for Anti-Submarine Warfare operations far beyond Torpedo range
- The test encompasses hybrid technology which helps upgrade the present system & also increase the striking range

Why is SMART torpedo system a 'game changer'?

- The system will change anti-submarine warfare tactics to a large extent, with SMART the most potent threats to surface ships that is the undetected submarine can be removed.
- Technology of SMART provides security of standoff ranges when prosecuting a submarine threat.
- SMART will give Indian warships and shore-based units a crucial standoff tool in the face of growing submarine threat from adversaries like China and Pakistan.
- With its **maximum range of 650 km**, it is first of such a class of weapon in the world.
- The Indian Navy theoretically now has a quick response measure to effectively saturate the Gwadar and Karachi ports at will, as well as blockade the Malacca strait at the first hint of Chinese submarines spotted by Indian satellites, MR aircraft, ships and other ISR assets,".
- It will provide the navy with a potential capability to target enemy vessels threatening the sea lines of communication (SLOCs) in the Indian Ocean Region.

Supersonic Missile Assisted Release of Torpedo (SMART) CONOPS
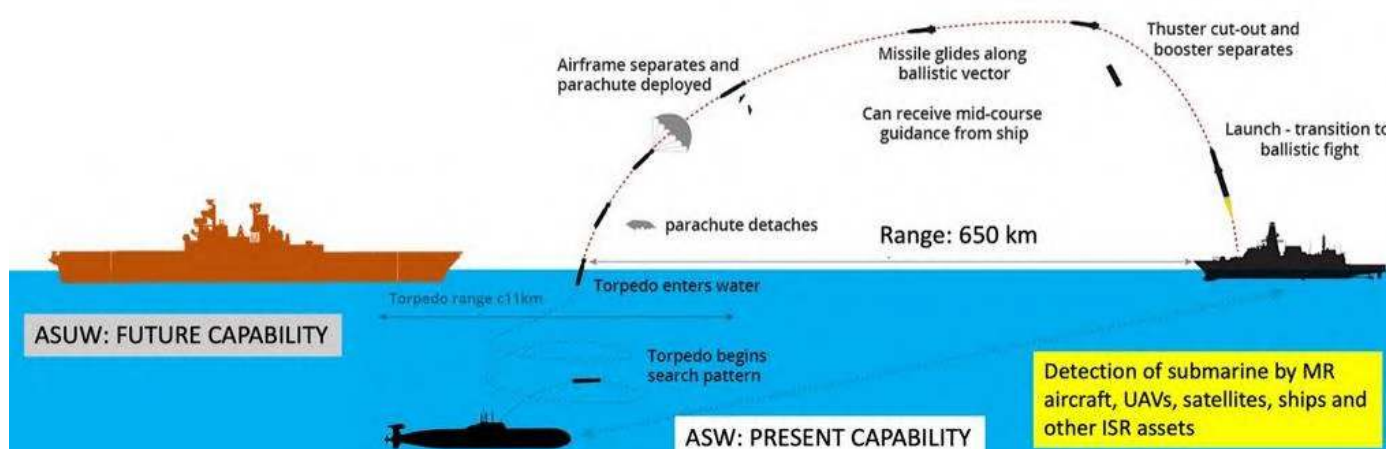
ASCON PHASE IV NETWORK
GS-III   SECURITY

Context

- To provide a big boost to the operational capability of defence forces, the Cabinet Committee on Security (CCS) has given its approval for Army Static Switched Communication Network (ASCON) Phase IV of the Indian Army.
- The India Army's Corps of Signals maintain the Army Static Switched Communication Network (ASCON).
- The project has been given to M/s ITI, a PSU, to be implemented within 36 months from the date of signing the contract, the project is estimated to cost around Rs 7796.39 crores.

What is ASCON?

- Army Static Switched Communication Network (ASCON) is the **army's telecom network** spread across different terrains in the western, northern, north-eastern regions.
- The project is an Internet Protocol- Multi Protocol Label Switching (IP-MPLS) based communication network with that combines satellite, microwave radio and optical fiber network.
- It is a fully automated, digital, protected, dependable and survivable static communication system based on satellite, microwave radio, optical fiber cable and mill metric wave communication apparatus.
- ASCON also provides services such as FAX, TELEX, Data Transfer and Video to defence users on this network.
- ITI will install and maintain telecom equipment's like IP/MPLS routers, mobile nodes, various telecom equipment and network managed services in order to provide the complete infrastructure at various sites and thereafter rollout of an optical fibre network over thousands of kilometers.

How will this help the Indian Army?

- This is going to be an upgrade on the existing Asynchronous Transfer Mode Technology to Internet Protocol (IP) / Multi Protocol Label Switching (MPLS) Technology.

- Also, Optical Fibre Cable (OFC), Microwave Radio and Satellite will be used for communication.
- In any operational scenario with almost 80 per cent indigenous content this system is expected to provide better survivability, responsiveness and high bandwidth.
- It will enhance the communication coverage of network closer to IB/LC/LAC.
- Through this network, the high bandwidth communication will extend to the remote operational areas in Central and Eastern Sectors.
- And will also reach to the forward locations in the Western border.
- This whole project is expected to augment the communication network of Indian Army in the sensitive forward operational areas.
- Keeping in view the ongoing tensions in eastern Ladakh, this communication project upgrade will give a boost to the operational preparedness of the Indian Army.
- Indian industry will get a big boost as this project involves the execution of civil works, laying of OFC, tower construction, etc.
- More employment opportunities will be generated in remote border areas.

Why is it critical?

- "ASCON Phase IV will provide better survivability, responsiveness and high bandwidth in any operational scenario and enhance the communication coverage of the network closer to the LAC, LOC and International Border.
- At a place line Ladakh for instance, the Army's communication channel will become more robust and adversaries will find it difficult to jam.
- The project is also a big opportunity for the public sector to showcase its capability and provide an impetus to the Indian economy and will be a step in the direction of achieving the goal of Atmanirbhar Bharat.

SHAURYA MISSILE

GS-III SECURITY

Context

- A successful trial of the nuclear capable Shaurya missile was conducted by India.

About Shaurya missile

- It is a land-based parallel of the submarine launched K-15 missile.
- These ballistic weapons belong to the K missile family — codenamed after late Dr APJ Abdul Kalam, which are launched from Arihant class of nuclear submarines.
- It is a land variant of short range SLBM K-15 Sagarika, which has a range of at least 750 kilometers.
- It is a canister-based system, which means that it is stored and operated from specially designed compartments.
- In the canister, the inside environment is controlled thus along with making its transport and storage easier, the shelf life of weapons also improves significantly.

The K Family of missiles

- The K family of missiles is primarily Submarine Launched Ballistic Missiles (SLBMs).
- They have been indigenously developed by Defence Research and Development Organisation (DRDO) and are named after Dr Kalam.
- The development of these naval platform launched missiles began in the late 1990s as a step towards completing India's nuclear triad — the capability of launching nuclear weapons from land, sea and air based assets.
- Because these missiles are to be launched from submarines, they are lighter, smaller and stealthier than their land-based counterparts.
- The K family missiles has to be fired from India's Arihant class nuclear powered platforms, the land and air variants of some of its members have also been developed by the DRDO.
- India has also developed and successfully tested multiple times the K-4 missiles from the family which has a range of 3500 km.
- It is reported that more members of K-family — reportedly to have been codenamed K-5 and K-6 — with ranges of 5000 and 6000 km are also under development.
- The early development trials of K-15 and K-4 missiles had begun in the early 2010s.

Side panel:

In the absence of SLBMs, Shaurya offers a viable N-strike option

- Surface-to-surface ballistic missile with **600km** range. Easy to hide and fire since it's stored underground
- Manoeuvrability makes it less vulnerable to enemy anti-missile defence systems. Prithvi and Agni missiles inducted so far are transported by vehicles or trains
- Two-stage, solid-fuelled missile is capable of carrying a one-tonne conventional or nuclear warhead

Strategic importance of SLBMs

- The capability of being able to launch nuclear weapons submarine platforms has great strategic importance in context of achieving a nuclear triad, especially in the light of 'no first use' policy of India.
- The sea-based underwater nuclear capable assets significantly increases the second strike capability of a country and thus boosts its nuclear deterrence.
- These submarines can not only survive a first strike by the adversary but also can launch a strike in retaliation thus achieving Credible Nuclear Deterrence.
- The 2016 commissioned nuclear powered Arihant submarine and its class members which in the pipeline, are the assets capable of launching missiles with nuclear warheads.
- The development of these capabilities is important in light of India's relations with the two neighbours China and Pakistan.
- With China having deployed many of its submarines, including some which are nuclear powered and nuclear capable, this capacity building is crucial for India's nuclear deterrence.

RUDRAM / GS-III SECURITY

Context

- India's first indigenous anti-radiation missile, Rudram, developed for the Indian Air Force, was successfully flight-tested from a Sukhoi-30 MKI jet off the east coast.

What is an anti-radiation missile?

- Anti-radiation missiles are designed to detect, track and neutralise the adversary's radar, communication assets and other radio frequency sources, which are generally part of their air defence systems.
- This missile navigation mechanism comprises an inertial navigation system — a computerised mechanism that uses changes in the object's own position — coupled with GPS, which is satellite-based.
- It has a "passive homing head" — a system that can detect, classify and engage targets (radio frequency sources in this case) over a wide band of frequencies as programmed.
- Rudram missile locks on the target, it is capable of striking accurately even if the radiation source switches off in between.
- Missile has an operational range of more than 100 km, based on the launch parameters from the fighter jet.

How was Rudram developed?

- Rudram is an air-to-surface missile, designed and developed by the Defence Research and Development Organisation (DRDO).
- DRDO initiated development of anti-radiation missiles of this type around eight years ago, and its integration with fighter jets has been a collaborative effort of various DRDO facilities and formations of the IAF and Hindustan Aeronautics Ltd.

How significant are such missiles in aerial warfare?

- Rudram has been developed for the IAF's requirement to enhance its Suppression of Enemy Air Defence (SEAD) capability.
- Anti-radiation missiles are used mainly in the initial part of air conflict to strike at the air defence assets of the enemy and leading to higher survivability to a country's own aircraft.
- Neutralising or disrupting the operations of the adversary's early warning radars, command and control systems, surveillance systems that use radio frequencies and give inputs for anti-aircraft weaponry, can be very crucial.

ANTI TANK GUIDED MISSILES / GS-III SECURITY

Context

- The indigenously developed low weight, fire and forget Man Portable Anti Tank Guided Missile (MPATGM) was successfully test fired.

What are Anti-Tank Guided Missiles and why are they important?

- An anti-tank guided missile (ATGM) or anti-armor guided weapon is a guided missile primarily designed to hit and destroy heavily armored military vehicles.
- ATGMs range in size from shoulder-launched weapons, which can be transported by a single soldier, to larger tripod-mounted weapons, which require a squad or team to transport and fire, to vehicle and aircraft mounted missile systems.

Development of ATGM in India

- Indian Army mainly uses various imported anti-tank guided missiles, the DRDO has been working on ATGMs as part of the Integrated Guided Missile Development Programme.
- The indigenously developed low weight, fire and forget Man Portable Anti Tank Guided Missile (MPATGM) was successfully test fired last year.
- In December 2019, government has procured Anti-Tank Spike Missiles from Israel along with the allied systems to meet operational requirements of the Indian Army.

How are laser-guided ATGMs different?

- The laser-guided ATGM, which is yet to receive an operational name — is designed to be fired from tanks.
- With its range limited to 1.5 to 5 kilometers, it locks and tracks the targets with the help of laser designation to ensure precision in striking the target.
- The missile uses a 'tandem' High Explosive Anti Tank (HEAT) warhead.
- The term tandem refers to the missiles using more than one detonation in order to effectively penetrate the protective armours.
- This missile has the capacity of piercing armoured vehicles, which use specially designed armour plates to counter the impact of such projectiles.
- This Laser Guided ATGM has been developed by two Pune based facilities of the DRDO's Armament and Combat Engineering Cluster — the Armament Research and Development Establishment (ARDE) and High Energy Materials Research Laboratory (HEMRL) — in association with Instruments Research & Development Establishment (IRDE), Dehradun.
- It is currently undergoing tests to be integrated with India's Main Battle Tank (MBT), Arjun.

Importance in armoured warfare

- It has ability to go past conventional defenses.
- Development of modern armour acts as a deterrent against enemy tanks.
- Operability of the missile from a tank is a key feature in armoured warfare.
- The missile has the capability of engaging with the target even if it is not in the line of sight, thus further enhancing its capability.

Context

- The last of the four indigenously built Anti-Submarine Warfare (ASW) stealth corvettes 'INS Kavaratti' under the Project 28 (Kamorta class) is commissioned into the Indian Navy in Vizag.
- INS Kavaratti is the last of the four indigenously built Anti-Submarine Warfare stealth corvettes under the Project 28.
- The indigenously built ship can detect and destroy submarine
- **Designed and built by:** Kavaratti is indigenously designed by the Indian Navy's in-house organisation Directorate of Naval Design (DND), and built by Garden Reach Shipbuilders and Engineers (GRSE) in Kolkata.
- **Significance:** This initiative portrays the growing capability of the Indian Navy, GRSE and the nation in becoming self-reliant, in tune with the national objective of 'Atmanirbhar Bharat'.

Project 28

- The Kamorta-class corvettes or Project 28 are a class of anti-submarine warfare corvettes currently in service with the Indian Navy.
- Built at Garden Reach Shipbuilders & Engineers (GRSE), Kolkata, they are the first anti-submarine warfare stealth corvettes to be built in India.
- All of the four corvettes, INS Kamorta, INS Kadmatt, INS Kiltan and INS Kavaratti were commissioned in 2014, 2016, 2017 and 2020 respectively.
- The platform and major internal systems of this class of corvettes are indigenously designed and built.
- The corvettes are named after the islands in the Lakshadweep archipelago

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INS Kavaratti

- The ship has up to 90% indigenously built content and the use of carbon composite for the superstructure is a commendable feat achieved in Indian shipbuilding.
- The ship's weapons and sensors suite are predominantly indigenous.
- Kavaratti has the state-of-the-art weapons and sensor suite, which are capable of detecting and destroying submarines.
- In addition to its anti-submarine warfare capability, the ship has a credible self-defence capability and good endurance for long-range deployments.

Combat-ready platform

- The ship will be commissioned into the Navy as a combat-ready platform as it has completed the sea trials of all the systems on board.
- Kavaratti takes her name from the erstwhile INS Kavaratti, an Arnala class missile corvette.
- The older Kavaratti played a key role during the 1971 war.

FEMINIST ETHICS

Context
- Two recent autobiographies by Indian women Economists Isher Ahluwalia and Devaki Jain described how they made their way in a discipline and a world dominated by men.

What is Feminist Ethics?
- Feminist ethics is an approach to ethics which regards that **traditionally ethical theorizing has undervalued and/or underappreciated women's moral experience**, which is largely male-dominated.
- Therefore, it chooses to re-imagine ethics through a holistic feminist approach to transform it.

Key Concept
- Feminist philosophers critique traditional ethics as pre-eminently focusing on men's perspective with little regard for women's viewpoints. (example - From Aristotle to Plato to Kant)
- Caring and the moral issues of private life and family responsibilities were traditionally regarded as trivial matters.
- Generally, women are portrayed as ethically immature and shallow in comparison to men.
- Traditional ethics prizes masculine cultural traits like "independence, autonomy, intellect, will, wariness, hierarchy, domination, culture, transcendence, product, asceticism, war, and death."
- And it gives less weight to culturally feminine traits like "interdependence, community, connection, sharing, emotion, body, trust, absence of hierarchy, nature, immanence, process, joy, peace, and life."
- Traditional ethics has a "male" orientated convention in which moral reasoning is viewed through a framework of rules, rights, universality, and impartiality and becomes the standard of a society.

Historical Background
- Feminist ethics developed from **Mary Wollstonecraft's 'Vindication of the Rights of Women'** published in 1792.
- With the new ideas from the Enlightenment, individual feminists being able to travel more than ever before, generating more opportunities for the exchange of ideas and advancement of women's rights.
- With new social movements developed unprecedented optimistic outlook on human capacity and destiny.
- This optimism was reflected in **John Stuart Mill's essay The Subjection of Women (1869).**
- Feminist approaches to ethics, were further developed around this period by other notable people like Catherine Beecher, Charlotte Perkins Gilman, Lucretia Mott and Elizabeth Cady Stanton with an emphasis on the gendered nature of morality, specifically related to 'women's morality'.

Feminist care ethics
- **Carol Gilligan and Nel Noddings** are exponents of a feminist care ethics which criticize traditional ethics as deficient to the degree they lack, disregard, trivialize or attack women's cultural values and virtues.

Some ill conceived notions about Feminism
- Feminism is often considered as synonymous to misandry, male bashing, sexism, and female superiority.
- Men cannot be Feminists.
- Giving women equal rights will be = Men giving up their own rights.
- Special Privileges to women are against what Feminism preaches.
- Feminism is against institutions like marriage.

What is Feminism actually?
- Feminism is a range of social movements, political movements, and ideologies **by both men and women** that aim to define and establish the political, economic, and social equality of the sexes.
- Feminist movements campaign for women's rights, including the right to: vote, hold public office, work, earn equal pay, own property, receive education, enter contracts, have equal rights within marriage, protect women and girls from rape, sexual harassment, and domestic violence.

Schools of Feminism
1. **Liberal feminism**, also called mainstream **feminism**: It is a main branch of **feminism** defined by its focus on achieving gender equality within the framework of **liberal** democracy and through political and legal reform.

2. **Socialist feminism:** It rose in the 1960s and 1970s as an offshoot of the feminist movement that focuses upon the interconnectivity of the patriarchy and capitalism. Socialist feminists argue that liberation can only be achieved by working to end both the economic and cultural sources of women's oppression.

3. **Radical Feminism:** Radical feminism is a perspective within feminism that calls for a radical reordering of society in which male supremacy is eliminated in all social and economic contexts.

THE WAVES OF FEMINISM
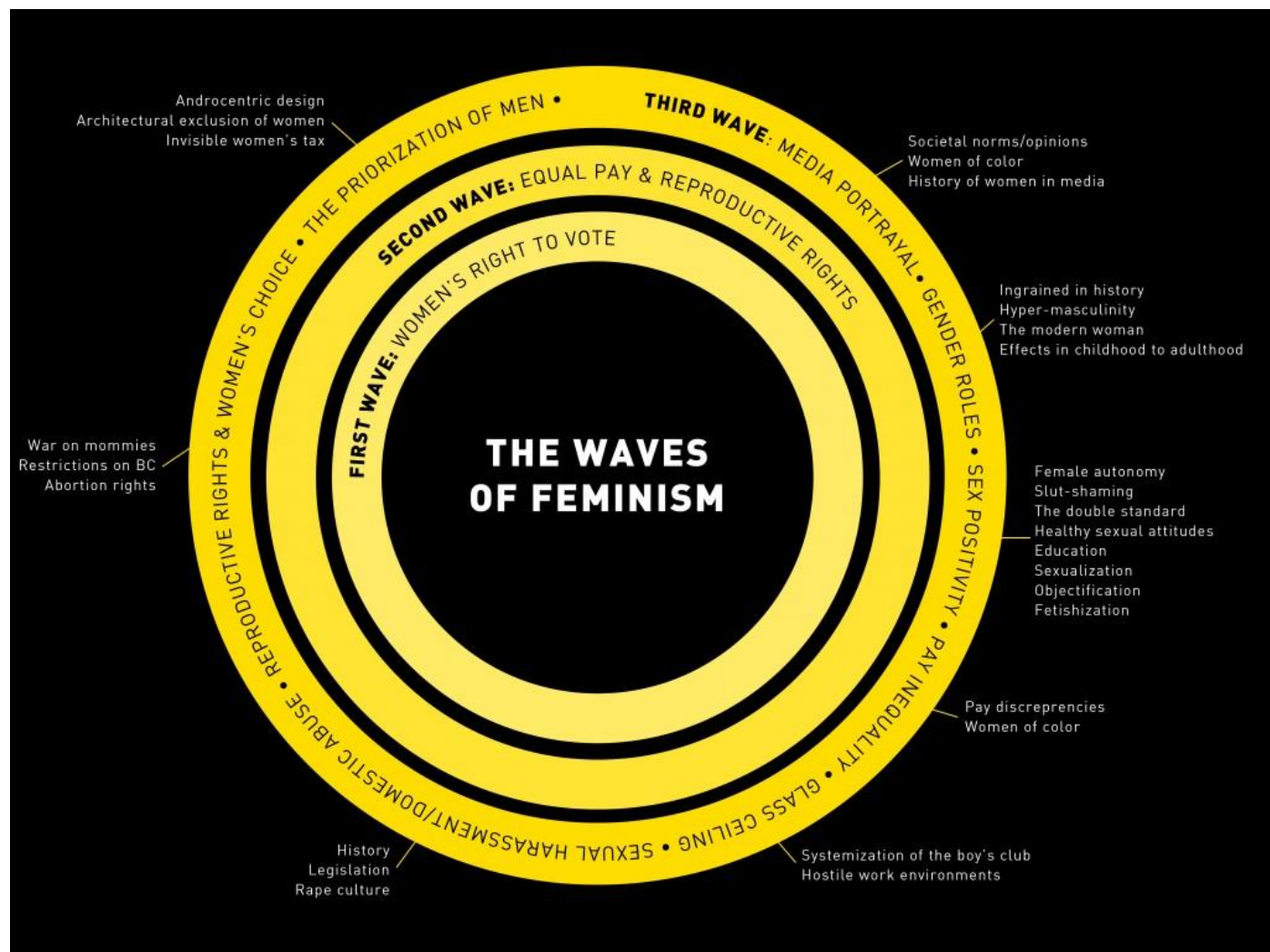
Feminism	
Pros	**Cons**
▪ Feminism may strengthen human rights	▪ May lead to excessive advantages of women
▪ Less gender discrimination	▪ Feminism may discriminate men
▪ Gender quotas	▪ Women may be preferred in case of divorce
▪ Better access to education	▪ Feminists may take it too far
▪ Higher level of freedom	▪ Frustration among men may increase
▪ Better overall treatment of women	▪ Women may not be accepted in certain positions
▪ Higher wages for women	▪ Men and women are borne with different characteristics
▪ May make leaving an unhappy marriage easier	▪ Women get a certain attitude
▪ Freedom to vote is encouraged	▪ More career women means fewer children
▪ May help to break male hierarchies	▪ Bureaucratic work
▪ Women may be treated better in general	▪ Even some women think feminism is unnecessary
▪ Confidence among women may increase	▪ May not make sense from a historical perspective
▪ Better chance for a leading corporate career for women	▪ Long-term effects still rather unclear
▪ May lead to a more tolerant society	

Why is Feminism so crucial? (Present Context)

- India recorded an average of 87 rape cases daily in 2019.
- According to the latest NCRB report, 2019 saw over 4 lakh reported cases of crimes committed against women.
- Nearly 4.6 crore females are 'missing' in Indian demography in the year 2020, mainly due to pre and post-birth sex selection practices stemming from son preference and gender inequality- United Nations Population Fund (UNFPA) Report.
- India accounts for almost one-third (32.1 per cent) of the total 142.6 million missing females in the world and is the second highest contributor after China.
- India's female **Labour Force Participation Rate (LFPR)**—fell to a historic low of 23.3% in 2017-18.
- 40% of Indians who graduate in Science, Technology, Engineering and Maths (STEM) disciplines are women.
- But women constitute merely 14% of scientists, engineers and technologists in research development institutions in India, according to the United Nations. Reasons: Giving up of higher studies due to marriage pressure, economic dependence, patriarchal society etc.
- Misogynistic mind-set of even People's Representatives:

Examples:

- Boys will be boys: In 2014, Samajwadi Party chief Mulayam Singh Yadav opposed capital punishment for rape, saying "ladke ladke hain, galti ho jati hai (boys will be boys, mistakes can be made)."
- 'Will ask my boys to go and rape CPM women': Trinamool Congress MP Tapas Pal in live video.
- Bangladesh PM Sheikh Hasina has zero tolerance toward terrorism," **"despite being a woman"**: PM Modi.

Importance of including women's perspective in the discipline of Ethics

- ✓ For the development of an inclusive consensus view in the discipline of Ethics
- ✓ to push towards gender equality with men together is the goal of feminist ethics.
- ✓ for transformation of societies and situations where women are harmed through violence, subordination and exclusion.
- ✓ To focus on gender relations in war torn societies which remain difficult to appear relevant in the mainstream discussions of ethics in international relations.
- ✓ "to understand, criticize, and correct" how gender operates within our moral beliefs and practices (Lindemann 2005, 11) and our methodological approaches to ethical theories.

Conclusion

- Ethics or moral philosophy is a branch of philosophy that "involves systematizing, defending, and recommending concepts of right and wrong behavior".
- Ethics seeks to resolve questions of human morality by defining concepts such as good and evil, right and wrong, virtue and vice, justice and crime.
- Resolving such questions of morality without the proper inclusion of women's perspectives and theories in the discipline will never lead to the correct evolution of the Ethics or Moral values.

As Swami Vivekananda said,- " It's not possible for a bird to fly on one wing"

SHORT NEWS ARTICLES
GENERAL STUDIES-I

Kala Sanskriti Vikas Yojana

Context

- Ministry of Culture has issued guidelines for holding cultural events and activities in online mode under various scheme components of **'Kala Sanskriti Vikas Yojana' (KSVY)** amid COVID-19.

About the Yojana

- In 2014, the Government consolidated **all major schemes of the Ministry of Culture under a single umbrella of Kala Sanskriti Vikas Yojana.** It is a **central sector scheme.**
- These schemes include missions, autonomous organizations, schemes and grantee institutions of the Culture ministry.
- KSVY has the following sub-schemes through which financial assistance is provided to cultural organizations:
  - ✓ Scheme of Financial Assistance for Promotion of Art and Culture.
  - ✓ Scheme of Financial Assistance for Creation of Cultural Infrastructure.
  - ✓ Scheme for Safeguarding the Intangible Cultural Heritage.

Sawantwadi Toys

Context

- Maharashtra Circle of India Post recently released picture postcards on Sawantwadi Toys to mark the 151 years of postcards in India.

About

- Sawantwadi toys refer to **handmade works made of wood** in Sawantwadi, Maharashtra.
- These toys are made from the wood of the Indian Coral tree - *Erythrina variegata.*
- Craftsmen who make these toys belong to the **Chittari community** who came to Sawantwadi from Karwar and Goa.

Postcards

- In India, postcards were **introduced in 1879**."East India Post Card" was inscribed on the first product.
- In 1899, the word 'East' was removed and it became India Post Card.
- In 1911, special postcards, without stamp print, were released for official use to commemorate the coronation of King George V during Delhi Durbar.
- After Independence, the first postcards were issued in 1949, and on October 2, 1951, the first postcards featuring Mahatma Gandhi were introduced.

Char Dham National Highway

- Char Dham National Highway, is an under construction two-lane express Highway with a minimum width of 10 metres in Uttarakhand.
- The highway will connect the four holy places in Uttarakhand states namely **Badrinath, Kedarnath, Gangotri and Yamunotri.**
- Originating **from Rishikesh**, Char Dham highway network will have four distinct routes: Rishikesh–Yamunotri; Rishikesh–Gangotri; Rishikesh–Kedarnath & Rishikesh-Badrinath.

Oaxaca

- In his Mann ki Baat address, Prime Minister Narendra Modi made a reference to the region of Oaxaca (pronounced O-aa-ha-ka) in Mexico, where khadi was being manufactured.
- Khadi reached the Latin American country after a local resident became influenced by a film on Mahatma Gandhi.

Parampara Series

Context

- The annual Parampara Series — National Festival of Music and Dance will be held online this year.

About

- Parampara Series started in 1997. It is an endeavour to promote Indian classical arts.
- It isorganised by Natya Tarangini and Kuchipudi exponents Raja Radha Reddy and Kaushalya Reddy.
- This year's Parampara Series will partner with United Nations India to celebrate 75 years of UN.

Shyamaji Krishna Verma(Birth anniversary)

- Indian patriot, lawyer and journalist who founded the **Indian Home Rule Society**, **India House** and **The Indian Sociologist in London.**
- India House and The Indian Sociologist, rapidly developed as an organized meeting point for radical nationalists among Indian students in Britain
- Verma was an **admirer of Dayanand Saraswati's approach** of cultural nationalism.
- India House produced many revolutionaries like Madam Cama, Veer Savarkar, Lala Hardyal and Madan Lal Dhingra.
- Shyamji Krishan was also **an admirer of Lokmanya Tilak** and **supported him during the Age of Consent bill controversy of 1890.**
- However, he rejected the petitioning, praying, protesting, cooperating and collaborating policy of the Congress Party, which he considered undignified and shameful.
- In 1897, following the atrocities inflicted by the British government during the plague crisis in Poona, he **supported the assassination** of the Commissioner of Plague **by the Chapekar brothers.**

Jayaprakash Narayan (Birth Anniversary)

- Indian independence activist, theorist, socialist and political leader.
- He is also known as the "Hero of Quit India Movement"
- He is remembered for leading the mid-1970s opposition against Prime Minister Indira Gandhi, for whose overthrow he had called for a "total revolution".
- Founding member of Congress Socialist Party (1934)
- Formed Praja Socialist Party with associates in 1952.

Nanaji Deshmukh (Birth Anniversary)

- Social reformer and politician inspired by Bal Gangadhar Tilak.
- Participated in Bhoodan Movement started by Vinoba Bhave.
- Established **Chitrakoot Gramoday Vishwavidyalaya** in Chitrakoot, India's first rural University.
- Implemented the philosophy of integral humanism to improve the living standards of more than 150 villages of Bundelkhand.
- Published **the journal "Manthan**" (introspection)

Ram Manohar Lohia (Death Anniversary)

- An activist in the Indian independence movement and a socialist political leader.
- One of the founders of the Congress Socialist Party and editor of its periodical Congress Socialist.
- One of the leading figures of Quit India revolt, sparked by Gandhi in August 1942.
- Works: Guilty Men of India's Partition; Marx, Gandhi and Socialism; The Caste System.
- In favor of compulsory Inter-caste marriages of Govt. servants.
- Voiced for eradication of caste systeM.
- Opposed India's involvement in World War II.

Golconda Fort (In News)

- Early capital city of the **Qutb Shahi dynasty (c. 1512–1687**), located in Hyderabad, Telangana.
- Flourished as a trade centre of large diamonds, known as the Golconda Diamonds because of the vicinity of **Kollur Mine.**
- Golconda Fort was **first built by the Kakatiyas** as part of their western defenses.
- The fort was rebuilt and strengthened by Rani Rudrama Devi and her successor Prataparudra.
- Later, the fort came under the control of **the Musunuri Nayakas**, who defeated the Tughlaqi army occupying Warangal.
- It also remained the capital of the Qutb Shahi dynasty until 1590 when the capital was shifted to Hyderabad. The **Qutb Shahis expanded the fort.**
- The fort finally fell into ruin in 1687, after an eight-month-long siege by Mughal emperor Aurangzeb.
- Diamonds excavated from Golconda include: Daria-i-Noor, Noor-ul-Ain, Koh-i-Noor, Hope Diamond, Princie Diamond, Regent Diamond, Wittelsbach-Graff Diamond.

Maldhari Tribe in news

- Maldharis are a tribal herdsmen community in Gujarat. Originally nomads, they came to be known as Maldharis after settling in Junagadh district (mainly Gir Forest, Banni Grassland Area).
- "Maldharis" are notable as the traditional dairymen of the region, and once supplied milk and cheese to the palaces of rajas.
- They have been living in the Gir Forest Area since the past thousand years now.

GEOGRAPHY

New Caledonia

Context

- People in the French overseas territory of New Caledonia have narrowly rejected independence from France in a referendum.

Geography

- New Caledonia lies in the **southwest Pacific Ocean**, south of Vanuatu.
- It is a part of French-administered territories outside Europe, mostly remains of the French colonial empire.
- **Capital**- Noumea.
- The archipelago, part of the Melanesia subregion, includes the main island of Grande Terre, the Loyalty Islands, the Chesterfield Islands, the Belep archipelago, the Isle of Pines, and a few remote islets.
- Official Language: French
- New Caledonia is part of Zealandia, a fragment of the ancient Gondwana super-continent.

Sambhar Lake

Context

- The Rajasthan government has planned to build temporary shelters for migratory birds near the famous Sāmbhar Lake before this year's winter season.

The lake

- The Sāmbhar Salt Lake is**India's largest inland salt lake**. It is located southwest of the city of Jaipur, Rajasthan.
- And it is the source of most of Rajasthan's salt production. (around 9% of India's salt production)
- The lake receives water from five rivers: Medtha, Samaod, Mantha, Rupangarh, Khari, and Khandela.
- It is surrounded by the **Aravali Hills on all sides.**
- Sambhar has been **designated as a Ramsar site** because the wetland is a key wintering area for thousands of pink flamingos and other birds that migrate from northern Asia and Siberia.
- The specialized algae and bacteria growing in the lake provide striking water colours and support the lake ecology that, in turn, sustains the migrating waterfowl.

Kyrgystan (In News)

- Kyrgystan is a landlocked country in Central Asia.
- It is bordered by Kazakhstan, Uzbekistan, Tajikistan and China.
- Capital and largest city: Bishkek.
- Kyrgyzstan attained sovereignty as a nation state after the breakup of the Soviet Union in 1991.
- 90% of the population is Muslims with the majority being Sunni.
- The mountainous region of the **Tian Shan covers over 80% of the country** (Kyrgyzstan is occasionally referred to as "the Switzerland of Central Asia", as a result)
- Kyrgyzstan is a member of the **Organization for Security and Cooperation in Europe (OSCE)**, a league of 56 participating states committed to peace, transparency, and the protection of human rights in Eurasia.

Mount Kilimajaro

Context

- Recently, a fire broke out on Mount Kilimanjaro.

About

- Mount Kilimanjaro is a dormant strato-volcano in Tanzania.
- It has three volcanic cones: Kibo, Mawenzi and Shira.
- Mawenzi and Shira are extinct, while Kibo is dormant and could erupt again.
- Uhuru Peak is the highest summit on Kibo's crater rim.
- Kilimanjaro is the **highest mountain in Africa** and the highest single free-standing mountain in the world: 5,895 metres (19,341 ft) above sea level.

- Because of its shrinking glaciers and disappearing ice fields, it has been the subject of many scientific studies.

Tanzania

- Tanzania is a country in East Africa within the African Great Lakes region.
- It borders Uganda to the north; Kenya to the northeast; Comoro Islands and the Indian Ocean to the east; Mozambique and Malawi to the south; Zambia to the southwest; and Rwanda, Burundi, and the Democratic Republic of the Congo to the west.
- Olduvai Lake- home to oldest hominid fossils is in Tanzania.
  - ✓ Strato Volcanoes comprise ~60% of the Earth's individual volcanoes and most are characterized by eruptions of andesite and dacite - lavas that are <u>cooler and more viscous than basalt</u>.
  - ✓ Strato volcanoes are usually about half-half lava and pyroclastic material, &suffer explosive eruptions.

Zoji La Tunnel (In News)

- Zoji La Tunnel is a <u>14.2 km long road tunnel under Zoji La pass</u> in the Himalayas between Sonmarg and Drass town in Kargil district of the Union Territory of Ladakh.It is currently under construction.
- The tunnel along with 6.5 km long Z-Morh Tunnel, will ensure **year-long roadconnectivity between Srinagar and Kargil** which currently remains closed for about seven months due to heavy snowfall.
- The Tunnel is on the Zoji La pass which is situated at an altitude of 3,528 m on Srinagar-Kargil-Leh highway.
  - ✓ Z – Mohr Tunnel is 22 km before Zoji La tunnel towards Srinagar.

Zoji La Pass

- Zoji La pass is in Ladakh. Located in the Drass, the pass <u>connects the Kashmir Valley to its west with the Drass and Suru valleys to its northeast and the Indus valley further east.</u>
- The National Highway 1 that runs between the union territories of Jammu & Kashmir and Ladakhtraverses the pass.

Demchok Sector

Context

- The Chinese soldier, who was apprehended by the Indian Army in the Demchok sector of Eastern Ladakh, has been handed over to China.

The region

- The Demchok sector is a <u>disputed region</u> between China and India.
- It is centered on the villages of <u>Demchok, Ladakh</u>& Dêmqog, Ngari Prefecture(Tibet).
- It is situated near the <u>confluence of the Charding Nullah and Indus River</u>.
- Line of Actual Control lies between the two nations situated along the Charding Nullah/Demchok River.
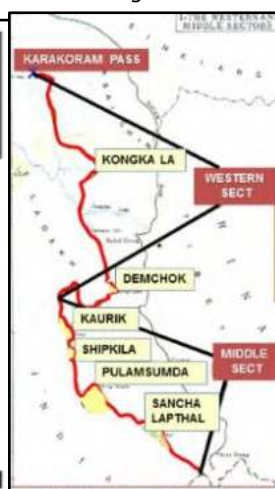
The Demchok sector with China's claim line in the west and India's claim line in the east. The Line of Actual Control, runs along the Charding Nullah and the Indus River.

Identify and locate the 23 disputed regions between India and China in a map. Arrange these disputed regions from East to West and North to South.

To have a fair idea about India-China Border Dispute. Read this Blog: https://www.iasgyan.in/blogs/india-china-border-dispute-decoded

Libya (In News)

- Libya is a country in the **Maghreb region in North Africa**.
- It is bordered by the Mediterranean Sea to the north, Egypt to the east, Sudan to the southeast, Chad to the south, Niger to the southwest, Algeria to the west, and Tunisia to the northwest.
- **Capital –** Tripoli
- It is a member of the United Nations (since 1955), the Non-Aligned Movement, the Arab League, the OIC and OPEC.
- The country's official religion is Islam.

Srisailam Hydroelectric Power Plant

Context

- Fire in Srisailam Power Plant.

Dam

- Constructed across the Krishna River in Kurnool district, Andhra Pradesh near Srisailam temple town.
- 2nd largest capacity working hydroelectric station in the country.
- Constructed in a deep gorge in the Nallamala Hills.
- Gravity & Masonry type dam.

Power Plant

- The underground hydroelectric power plant in Srisailam in the state of Telangana.

> - A Gravity dam has been defined as a **"structure which is designed in such a way that its own weight resist the external forces"**. This type of a structure is most durable and solid and requires very less maintenance.
> - Such dams are constructed of **masonry or Concrete**.
> - However, **concrete gravity dams are preferred these days** and mostly constructed.

Mount Girnar

Context

- Recently, Narendra Modi digitally inaugurated the newly-built passenger ropeway service at Girnar in Junagadh district, Gujarat.
- The ropeway project is being touted as the longest temple ropeway in Asia.

About Girnar

- Girinar is one of the most ancient Hindu and Jain pilgrimage sites in India.
- Lord Dattatreya performed penance at the top of the hill.
- Also, 22nd Tirthankar Lord Neminath attained Nirvana here.
- Girnar is also known as Girinagar ('city-on-the-hill') or Revatak Parvata.
- Mount Girnar is a major igneous plutonic complex which intruded into the basalts towards the close of the Deccan Trap period.

Kaleshwaram Lift Irrigation Project (In News)

- Multi-purpose irrigation project **on the confluence of Pranhita & Godavari River** in Kaleshwaram, Telangana.
- Currently the **world's largest multi-stage lift irrigation project**.
- Originally- Pranahita-Chevella project.(Andhra Pradesh)
- Redesigned and renamed as Kaleshwaram project in 2014(Telangana) after state bifurcation.
- Will supply drinking water to Hyderabad and Secunderabad.

Godavari

- India's second longest river after the Ganga**. Other name:** Dakshin Ganga
- **Source:** Brahmagiri Mountain, Triambakeshwar, Maharashtra.
- **Basin**: Maharashtra (48.6%), Telangana (18.8%), Andhra Pradesh (4.5%), Chhattisgarh (10.9%) and Odisha (5.7%).
- **Left Bank Tributaries**:Purna, Pranhita, Indravati and Sabari River.
- **Right Bank Tributaries**: Pravara, Manjira, Manair
- Manjira is the longest tributary and holds the Nizam Sagar reservoir.
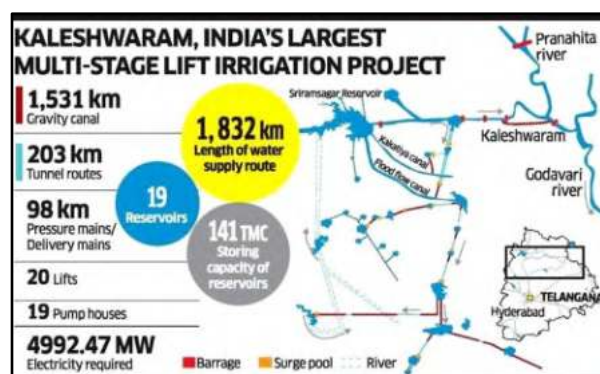
Taiwan Strait

Context

- A U.S. warship sailed through the Taiwan enraging China, which claims sovereignty over the island and surrounding seas.

About

- The Taiwan Strait, also known as the **Formosa Strait**, is a 180-kilometer wide strait separating Taiwan and mainland China.
- The strait is currently <u>part of the South China Sea and connects to the East China Sea to the north.</u>
- The Taiwan Strait is the body of water separating China's **Fujian Province** from Taiwan Island.
- Current international agreement does not define the Taiwan Strait but places its waters within the South China Sea.
- The entire strait is on Asia's continental shelf.

Khardungla Pass (In News)

- It is a mountain pass (5,359 m) in the Leh district of the union territory of Ladakh.
- It is the <u>gateway to the Shyok and Nubra valleys</u>.
- <u>Maintained by the Border Roads Organisation</u>, the pass is strategically important to India as it is used to carry supplies to the Siachen Glacier.
- Khardong La is historically important as it lies on the major caravan route from Leh to Kashgar in Central Asia.
- To pass through it <u>an Inner Line Permit (ILP),</u> is required for tourists (not needed for Ladakh citizens).

Courtesy: PMFIAS

Pearl River Estuary

Context

- Chinese pink dolphins are making a comeback in the Pearl River Estuary (PRE).

About

- Pearl or Canton River is an extensive river system in southern China.
- The Pearl River estuary includes Hong Kong, Macau as well as the mainland Chinese cities of Shenzhen, Guangzhou and Dongguan.
- The estuary is one of the busiest shipping lanes in the world.

Pink Dolphin

- The Amazon river dolphin also known as pink river dolphin, is a species of toothedwhale.
- Pink dolphins have seen a decline in their numbers in the past 15 years by 70-80 per cent. Dolphins use echolocation to find their way in water.
- IUCN Status: Endangered.

Borders

Context

- Assam-Mizoram border witnessed calashes over a territory dispute.

About

- Mizoram borders Assam's Barrack valley which comprises of Cacher, Hailakandi & Karimganj
- States bordering Bangladesh: Assam, Tripura, Mizoram, Meghalaya and West Bengal

Sadhna Pass

Context

- Recently, Riflewomen of the para-military force Assam Rifles were deployed at the Sadhna Pass.

About

- Sadhna Pass, previously **called as Nastachun pass**, is a mountain pass in **Jammu and Kashmir.**

- It is located in the Himalayas and connects Karnah tehsil of Kupwara district with the rest of the Indian administrated Kashmir valley.
- It is located in the vast <u>Shams Bri mountainous range</u>. It is about 3000 m above sea level. The pass is best known for its generation-old mythological legend of Blind and Deaf Fairies.

Chushul in News

- Chushul is a village in the Leh district of Ladakh.
- It is located in the Durbuk tehsil, **south of the Pangong Lake and west of the Spanggur Lake.**
- The Line of Actual Control with China runs about 5 miles east of Chushul, across the Chushul Valley.
- This place is famous for the Indian Army who fought to the <u>'last man, last round' at</u> Rezang La (Chushul) on 18 November 1962.
- It is one of the five border meeting points between Indian and China.
- The two sides hold <u>Border Personnel Meetings at five points</u> --**Daulat Beg Oldie** in northern Ladakh, **Kibithu** in Arunachal Pradesh, **Chusul i**n Ladakh, **Bum-La** near Tawang in Arunachal Pradesh and **Nathu-La** in Sikkim.

Gorkhaland Territorial Administration (in News)

- The Gorkhaland Territorial Administration (GTA) is an Autonomous District Council for the Darjeeling and Kalimpong areas of the West Bengal.
- The GTA was **formed in 2012** to replace the Darjeeling Gorkha Hill Council, which was formed in 1988 and administered the Darjeeling hills for 23 years.
- GTA presently consists of three hill subdivisions **Darjeeling, Kurseong, Mirik,** some areas of **Siliguri** subdivision of Darjeeling district and the whole of **Kalimpong district** under its authority.
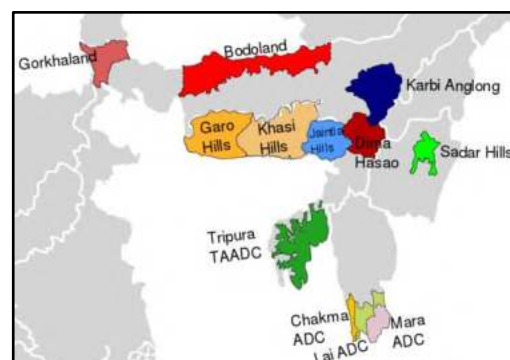
Protected areas in Kerala

Context

- Recently, a tunnel road project was launched that would connect Kozhikode with Wayanad in Kerala.

About

- There are six national parks in Kerala: Anamudi Shola, Eravikulam NP, Mathikettan Shola NP, Pambadum Shola NP, Periyar NP
- Tiger Reserves: Periyar, Perambikulam
- Some Wildlife Sanctuaries: Aralam, Chimmon, Chinnar, Chulannur Peafowl, Idukki, Kottiyoor, Kurinjimala, Mangalavanam Bird WLS, Neyyar, Parambikulam, Peechi-Vazhani, Peppara, Periyar, Shendurney, Thattekad Bird WLS, Wayanad.

Mecca

Context

- Will soon reopen for pilgrimage.

About

- Holiest city in Islam and the capital of the Makkah Province of Saudi Arabia.
- Makkah is located in **the Hejaz region**, a 200 km (124 mi) wide strip of mountains separating the **Nafud desert from the Red Sea**.

Locate Borders of Saudi Arabia.

Central Asian Dialogue

- Recently held. Attended by India & 5 central Asian Countries.

Locate country borders in the Map. Arrange capitals from west to east. Locate water bodies and their borders.

Aldabra Coral Reef

Context

- Coral reefs in the lagoon of the Seychelles' Aldabra atoll, has recovered faster after the 2015-2016 bleaching event due to tolerance to heat stress -A new research has found.

About

- Aldabra is the **world's second-largest coral atoll.**
  (Largest: Kiritimati Atoll, also called Christmas Atoll, Northern Line Islands, part of Kiribati, in the west-central Pacific Ocean.)
- Aldabra is situated in the Aldabra Group of islands in the Indian Ocean that are part of the Outer Islands of the Seychelles, southwest of the capital, Victoria, on Mahé Island.
- It is home to **giant endemic Aldabra Tortoise.**

Nechiphu Tunnel

Context

- Recently, Defence minister Rajnath Singh laid the foundation stone of the Nechiphu Tunnel.

About

- Nechiphu Tunnel is located in Balipara-Charduar-Tawang (BCT) road in West Kameng district of **Arunachal Pradesh.**

Dhaulasidh Hydro Electric Project

Context

- The Union Government has approved an investment proposal 66-Megawatt Dhaulasidh Hydro Electric Project.

About

- It will be built **on River Beas**, Himachal Pradesh.
- Dams in Himachal: Asan Barrage, Bhakra Nangal Dam, Chamera Dam, Chamera II Hydroelectric Plant, Karcham Wangtoo Hydroelectric Plant, Kishau Dam, Koldam Dam, Maharana Pratap Sagar, Nathpa Jhakri Dam, Pandoh Dam, Pong Dam.

- Bhakra Dam is a concrete gravity dam on the **Sutlej River in Bilaspur**. The dam forms the **Gobind Sagar reservoir.**

POLITY

New rules for postal ballot

Context

- Election Commission of India had made the procedure to opt for postal ballot more convenient for those above 80 years of age and people with disabilities.

Details

- The form required to opt for the postal ballot would be delivered at the residence of all those above 80 years of age and people with disabilities by the booth level officer under his polling station.
- It would be up to these two category of voters to opt for postal ballot
- If he/she opts for postal ballot, then the booth level officer will collect the filled-in form 12-D from the house of the elector within five days of the notification and deposit it with the returning officer forthwith.
- These instructions have been issued based on the feedback the poll panel received from civil society and media during its visit to poll-bound Bihar last week

Election Commission of India

- It is an autonomous constitutional authority responsible for administering election processes in India at national and state.
- The body administers elections to the **Lok Sabha, Rajya Sabha, state Legislative Assemblies, state legislative Councils**, and the offices of the **President and Vice President** of the country.
- The Election Commission operates under the authority of Constitution per **Article 324**, and subsequently enacted **Representation of the People Act.**
- It was adopted on 1 January 1990 which turned the commission into a multi-member body: a **3-member Commission** has been in operation since then and the decisions by the commission are made by a **majority vote.**
- Removal:
  o The Chief Election Commissioner of India can be removed from their office similar to the removal of a judge of the Supreme Court of India which requires a resolution passed by the Parliament of India a two-thirds majority in both the Lok Sabha and the Rajya Sabha on the grounds of proved misbehavior or incapacity.
  o Other Election Commissioners can be removed by the President of India on the recommendation of the Chief Election Commissioner.

PM Street Vendor's AtmaNirbhar Nidhi

Context:

- **Ministry of Housing & Urban Affairs** launched a scheme PM Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi) to **empower Street Vendors** by not only extending loans to them, but also for their holistic development and economic upliftment.
- The scheme intends to facilitate collateral **free working capital loans of up to INR10,000/-** of one-year tenure, to approximately **50 lakh street vendors**, to help resume their businesses in the urban areas, including surrounding peri-urban/rural areas
- The scheme is a Central Sector Scheme i.e. fully funded by Ministry of Housing and Urban Affairs with the following objectives:
  o To facilitate working capital loan up to 10,000;
  o To incentivize regular repayment; and
  o To reward digital transactions
- The Scheme is available for beneficiaries belonging to only those States/UTs which have notified Rules and Scheme under **Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014**.
- The scheme will **incentivize digital transactions** by vendors through cash back facility. The transaction trail so created will build the credit score of vendors for enhancing their future credit needs.
- The vendors, availing loan under the scheme, are eligible to get an **interest subsidy @ 7%.** The interest subsidy amount will be credited into the borrower's account quarterly.

Bodoland Territorial Council

Context

- The Assam Cabinet has decided to request the State Election Commission to schedule the Bodoland Territorial Council Region election in December.

About Bodoland Territorial Council

- The Bodoland Territorial Council (BTC) is an autonomous district council for the **Bodoland Territorial Region** in India.
- It was established in February **2003**.
- The BTC has **40 elected members** and an **additional six members** that are appointed by the **Governor of Assam.**
- The area under the BTC jurisdiction is officially called the **Bodoland Territorial Region (BTR).** The region falls within the geographical map of the least developed region in India. The agro-based economy is the only source of livelihood of the people.
- The Bodoland Territorial Council is **headed by a Speake**r and its executive committee is chaired by a **Chief Executive Member**.
- The BTR consists of four contiguous districts — **Kokrajhar, Baksa, Udalguri and Chirang** — an area of 8,822 km2 (11% of Assam land area i.e. 78,438 km2) comprising various protected tribal belts and blocks in Assam.
- Its establishment was under the **Amended Sixth Schedule of the Constitution of India**.
- The executive and legislative powers of the Bodoland Territorial Council are derived from the provisions of the Sixth Schedule of the Constitution of India and the 2003 and 2020 Bodoland Peace Agreements.
- The Bodoland Territorial Council to **levy taxes, fees and tolls** on; buildings and land, animals, vehicles, boats, entry of goods into the area, roads, ferries, bridges, sanitation, employment and income and general taxes for the maintenance of schools and roads.

Star campaigner

Context

- The Election Commission of India (ECI) has revised guidelines concerning star campaigners for all ongoing and future polls, bypolls in view of the COVID-19 pandemic.

New Guidelines

- The maximum limit on the number of star campaigners for recognised National/State political parties shall be 30 instead of 40.
- For unrecognised registered political parties, the limit shall be 15 instead of 20.
- The period of submission of the list of star campaigners has been extended from 7 days to 10 days from the date of notification.
- Political parties, which have already submitted a list of star campaigners shall resubmit a revised list within the stipulated period.
- Requests for permission for the campaigning by star campaigners shall be submitted to the district election authorities at least 48 hours before the start of the campaign so that all necessary safety measures are put in place by all concerned stakeholders well in time.

River Boards

Context

- The Centre has decided to go ahead with notifying the jurisdiction of both **Krishna River Management Board (KRMB)** and **Godavari River Management Board (GRMB)** as per the **Andhra Pradesh Reorganisation Act**.
- The jurisdiction of both KRMB and GRMB have not been decided even after six years of bifurcation of the State.

About River Boards

- The **Central Government** may, on a request received on this behalf from a State Government or otherwise, by notification in the Official Gazette, establish a River Board.
- They are formed for **advising the Governments interested in relation to such matters concerning the regulation or development of an inter-State river** or river valley or any specified part thereof and for performing such other functions as may be specified in the notification, and different Boards may be established for different inter-State rivers or river valleys:
- **Composition of Board**:
  o The Board shall consist of a **Chairman** and such **other members as the Central Government thinks fit** to appoint.
  o A person shall not be qualified for appointment as a member unless, in the opinion of the Central Government, he has special knowledge and experience in **irrigation, electrical engineering, flood control, navigation, water conservation, soil conservation administration or finance**.
- **Functions of Board:**

o The Central Government, after consultation with the Governments interested, may, by notification in the Official Gazette, empower the Board to perform all or such of the **functions under section 13** as may be specified in the notification.

o The Board shall exercise its powers and perform all the functions which it is empowered to do by or under this Act within its area of operation.

o In performing its functions under this Act, the Board shall **consult the Governments interested at all stages** and endeavor to secure, as far as may be practicable, agreement among such Governments.

SVAMITVA scheme

Context

- Prime Minister Narendra Modi launched the **distribution of property cards** under the SVAMITVA scheme through video conferencing. The government aims to provide such property cards to **each household in the next three to four years in every village** across the country.

About SVAMITVA card

- The acronym SVAMITA stands for **Survey of Villages and Mapping with Improvised Technology in Village Areas**.

- It is a **Central Sector Scheme** aimed at providing **'record of rights' to village household** owners possessing houses in inhabited rural areas in villages and issuance of property cards to the property owners."

- The plan is to **survey all rural properties using drones and prepare GIS** based maps for each village.

- The framework for implementation of SVAMITVA scheme, finalized by the **Ministry of Panchayati Raj**, provides a multi-stage process of generating a property card, which starts with signing of a memorandum of understanding between Survey of India (SoI) and respective state governments.

- **Updation in the future:**
  o Once the GIS database is prepared encompassing the 6.62 lakh villages, state governments will be responsible for conducting future surveys and updating the GIS database.
  o They will also decide the update frequency of the re-survey.

- **Ownership of the SVAMITVA data:**
  o The orthorectified base maps shall be jointly **owned by the Survey of India, Ministry of Panchayati Raj** and the state government.
  o The GIS data will also be jointly owned by Centre and State.

Benefit of issuing a SVAMITVA property card

- It will enable rural households to use their property as a financial asset for taking loans and other financial benefits.

- It will help in determination of property tax, which would accrue to the Gram Panchayats directly in states where they are empowered to collect such taxes.

- The cards will help increase liquidity of land parcels in the market and increase the financial credit availability to the village.

- The scheme will also pave the way for creation of accurate land records for rural planning.

- All the property records and maps will be available at Gram Panchayat, which will help in taxation of villages, construction permits, elimination of encroachments, etc.

Party symbols for Political Party

Significance of Party symbol

- In a vast and diverse country like India, where several nondescript and small political parties try out their luck in state elections, symbols are crucial **campaigning tools to connect with the voters.**

- Since nearly **85 per cent of the electorate were illiterate** at that point, visual symbols were allotted to parties and candidates to help them identify the party of their choice.

Types of symbols are there

- As per the **Election Symbols (Reservation and Allotment) (Amendment) Order, 2017**, party symbols are either **"reserved" or "free"**.

- While **eight national parties and 64 state parties across** the country have "reserved" symbols, the Election Commission also has a **pool of nearly 200 "free" symbols** that are allotted to the thousands of unrecognized regional parties that pop up before elections.

- According to EC, there are **2,538 unrecognized parties** in India.

Allotment of symbols to political parties

- Election Commission is mandated to provide for "**specification, reservation, choice and allotment of symbols at parliamentary and assembly elections, for the recognition of political parties**".

- As per the guidelines, to get a symbol allotted, a **party/candidate has to provide a list of three symbols** from the EC's free symbols list at the time of filing nomination papers.

- When a recognized political party splits, the Election Commission takes the decision on assigning the symbol.

National Authority for Recycling of Ships

Context

- The Central Government has notified the **Directorate General of Shipping** as **National Authority for Recycling of Ships** under the section 3 of the Recycling of Ships Act, 2019.

Directorate General of Shipping

- As an apex body, DG Shipping is authorized to **administer, supervise and monitor all activities relating to Ship Recycling**.
- DG Shipping will look after the **sustainable development of the Ship Recycling industry**, monitoring the compliance to environment-friendly norms and safety and health measures for the stakeholders working in the ship recycling industry.
- DG Shipping will be the **final authority for the various approvals required by the Ship-Recycling yard owners** and State Governments.
- DG Shipping is a **representative of India in IMO** and all the conventions of IMO are being enforced by DG Shipping.
- National Authority of Ship Recycling will be set up in **Gandhinagar, Gujarat**.
- The location of the office will **benefit the Ship Recycling yard owners** situated in Alang, Gujarat which is home of Asia's largest ship breaking and ship recycling industry in the world.

General consent to CBI

Context

- The Maharashtra government has **withdrawn "general consent"** given to the Central Bureau of Investigation (CBI) to probe cases in the state.
- The decision means the central agency will have to get consent from the state government for every case it registers in Maharashtra.

Types of cases CBI is involved in at a state level

- The CBI is divided into three categories when it comes to investigation.
- **Anti-Corruption Division:** It investigates cases **against public servants** under the control of the central government and cases against public servants working under state governments, which have been **entrusted to the CBI by the state**, and serious departmental irregularities committed by the above mentioned.
- **The Economic Offences Division:** It investigates **financial crimes, bank frauds, money laundering, illegal money market operations, graft in PSUs** and banks.
- **The Special Crimes Division:** It handles cases of **conventional nature** such as offences relating to internal security, espionage, sabotage, narcotics and psychotropic substances, antiquities, murders, dacoities/robberies, and cheating among others.

Impact on other agencies

- The **National Investigation Agency (NIA)** has jurisdiction across the country and does not need special permission from state governments.
- **Enforcement Directorate (ED)** conducts its probe under the PMLA and FERA Act.
- The government has **withdrawn general consent under the Delhi Police Special Establishment (DPSE) Act** which will only impact the CBI.

Impact on functioning of the CBI

- The decision will increase work for both the CBI and the state government.
- Every time the CBI traps some central government employee taking a bribe, it will need to seek approval from the Maharashtra government before registering a case.
- Similarly, the Maharashtra government department too will be burdened with approval requests on a case-by-case basis.
- The CBI has, however, recently started taking recourse in a Calcutta High Court judgment.
- The HC, in its order in the Ramesh Chandra Singh and another vs. CBI, observed that "the court is of the view that the central government/CBI's power to investigate and prosecute its own officials cannot be in any way impeded or interfered by the state even if the offenses were committed within the territory of the state."

About CBI

- The Central Bureau of Investigation (CBI) is the **premier investigating agency of India**.
- It operates under the jurisdiction of the **Ministry of Personnel, Public Grievances and Pensions**.
- Originally set up to investigate bribery and governmental corruption, in 1965 it received expanded jurisdiction to investigate breaches of central laws enforceable by the Government of India, multi-state organized crime, multi-agency or international cases.
- CBI is **exempted from the provisions of the Right to Information Act**.
- CBI is India's officially designated single point of contact for liaison with the **Interpol**.

- CBI Director: S/he is appointed, for **not less than a term of 2 years**, by the **Appointment Committee on recommendation of Selection Committee** as mentioned in **DSPE Act 1946 amended through the Lokpal & Lokayukta Act 2013 and CVC Act, 2003[13]** respectively.
- The Appointment Committee consists of:
  - Prime Minister – Chairperson
  - Leader of Opposition of Loksabha or the Leader of the single largest opposition party in the Lok Sabha, if the former is not present due to lack of mandated strength in the Lok Sabha - member
  - Chief Justice of India or a Supreme Court Judge recommended by the Chief Justice – member

SOCIAL JUSTICE

Section 29 of the POCSO Act

Context

- The Delhi High Court has ruled that the presumption of guilt engrafted in Section 29 of the Protection of Children from Sexual Offences (POCSO) Act gets triggered and applies only once trial begins, that is after charges are framed against the accused.
- **Section 29 of the POCSO Act:** It says that when a person is prosecuted for committing an offence of sexual assault against a minor, the special court trying the case "shall presume" the accused to be guilty.

Protection of Children from Sexual Offences Act

- The Act is **gender neutral** and regards the b**est interests and welfare of the child a**s a matter of paramount importance at every stage so as to ensure the **healthy physical, emotional, intellectual and social development of the child.**
- The Act defines a **child as any person below eighteen years of age**, and regards the best interests and well-being of the child as being of paramount importance at every stage, to ensure the healthy physical, emotional, intellectual and social development of the child.

Key factors

Real-life considerations for court while deciding bail

Age of the minor victim: The younger the victim, the more heinous the offence alleged

Age of the accused: The older the accused, the more heinous the offence alleged

Comparative age of victim and accused: The more their age difference, the more the element of perversion in the offence alleged

Familial relationship: The closer such relationship, the more odious the offence alleged

WHAT DOES SECTION 29 OF THE POCSO ACT SAY

When a person is prosecuted for committing an offence of sexual assault against a minor, the special court trying the case "shall presume" the accused to be guilty

- It defines different forms of sexual abuse, including **penetrative and non-penetrative assault**, as well as **sexual harassment and pornography**, and deems a sexual assault to be **"aggravated" under certain circumstances**, such as when the abused child is **mentally ill or when the abuse is committed by a person in a position of trust or authority** vis-à-vis the child, like a family member, police officer, teacher, or doctor.
- People who **traffic children for sexual purposes** are also punishable under the provisions relating to abetment in the Act. The Act **prescribes stringent punishment graded** as per the gravity of the offence, with a maximum term of rigorous imprisonment for life, and fine.
- It **defines "child pornography"** as any visual depiction of sexually explicit conduct involving a child which include photograph, video, digital or computer generated image indistinguishable from an actual child, and image created, adapted, or modified, but appear to depict a child;'
- The Act provides for the **establishment of Special Courts for trial of offences** under the Act, keeping the best interest of the child as of paramount importance at every stage of the judicial process.
- The Act recognizes that the **Intent to commit an offence**, **even when unsuccessful** for whatever reason, needs to be penalized.
- The attempt to commit an offence under the Act has been made **liable for punishment for up to half the punishment** prescribed for the commission of the offence.
- The Act also provides for **punishment for abetment of the offence**, which is the same as for the commission of the offence.

National Commission for Protection of Child Rights (NCPCR)

Context

- The Supreme Court has sought a response from the country's apex child rights body, the National Commission for Protection of Child Rights (NCPCR), to its request to eight States to "produce" children living in care homes before the local child welfare committees for their "immediate repatriation" with their families." with their families.

Background

- The court is suo motu monitoring the welfare of children placed in care homes during the pandemic.
- The NCPCR reportedly wrote to Tamil Nadu, Andhra Pradesh, Telangana, Mizoram, Karnataka, Kerala, Maharashtra and Meghalaya in this regard. These States combinedly have 1.84 lakh children in care homes. This accounts for over 70% of the children in care homes.

About NCPCR

- The National Commission for Protection of Child Rights (NCPCR) is a statutory body established by an Act of Parliament, the **Commission for Protection of Child Rights (CPCR) Act, 2005.**
- The Commission works under the aegis of the **Ministry of Women and Child Development**.
- The Commission is mandated under section 13 of CPCR Act, 2005 "to ensure that all Laws, Policies, Programmes, and Administrative Mechanisms are in consonance with the Child Rights perspective as enshrined in the Constitution of India and the UN Convention on the Rights of the Child."

COVID 19 in South Asia Report

Context

- Beaten or Broken? Informality and COVID-19 in South Asia" Report was recently released by the World Bank.

Details of the Report

- It claims that South Asia is **set to plunge into its worst-ever recession in 2020** as the devastating impacts of Covid-19 on the region's economies linger.
- The prolonged closure of schools due to the Covid-19 pandemic in India may cause a **loss of over USD 400 billion in the country's future earnings**, besides substantial learning losses, according to a World Bank report.
- The South Asia region stands to **lose USD 622 billion from the school closures** in the present scenario or up to USD 880 billion in a more pessimistic scenario.
- Temporary school closures in all South Asian countries have had major implications for students. They have kept **391 million students out of school in primary and secondary** education, further complicating efforts to resolve the learning crisis.
- The report also noted that the **pandemic may cause up to 5.5 million students to drop out f**rom the education system and cause substantial learning losses, which will have a lifetime impact on the productivity of a generation of students.
- The projected **learning loss for the region is 0.5 years** of learning-adjusted years of schooling (LAYS), falling from 6.5 LAYS to 6.0 LAYS, an enormous setback from recent advances in schooling.
  - The '**Learning Adjusted Year of Schooling' (LAYS) concept**, introduced by the World Bank, seeks to combine access and learning outcomes into a single measure.
  - It combines **quantity (years of schooling) and quality** (how much kids know at a given grade level) into a single summary measure of human capital in a society.
- The report has projected that based on country data on household labor incomes, the average child in South Asia may lose USD 4,400 in lifetime earnings once having entered the labour market, equivalent to 5 percent of total earnings.

World Bank

- The World Bank is an international financial institution that provides **loans and grants to the governments of low and middle income countries** for the purpose of pursuing capital projects.
- It comprises two institutions:
  - the International Bank for Reconstruction and Development (IBRD), and
  - the International Development Association (IDA).
- The World Bank is a component of the World Bank Group.
- The World Bank's most recently stated goal is the reduction of poverty.

Tech For Tribal

Context

- Tech For Tribal initiative was **e-launched by TRIFED, Ministry of Tribal Affairs** in association with **Chhattisgarh MFP Federation** and I**IT Kanpur**.

About the Program

- It is a programme by **TRIFED**, in collaboration with the Ministry of Small and Medium Enterprises (MSME) under the **Entrepreneurship and Skill Development Programme (ESDP) programme.**

- It aims at the **holistic development of tribes**.
- It focuses on entrepreneurship development, soft skills, IT, and business development through SHGs operating through **Van Dhan Vikas Kendras (VDVKs)**.
- The programme aims to **tap the traditional knowledge and skills of tribal** and add branding, packaging and **marketing skills** to optimize their income through a market led enterprise model by setting up Van Dhan Kendras (VDVKs).
- Tech for Tribal initiative" is a unique program to make **tribal of India "Aatmanirbhar"**, focusing to bridge the gap between tribal entrepreneurs and urban markets.

Tribal Cooperative Marketing Federation of India (TRIFED)

- It is a national level cooperative body under the administrative control of the **Ministry of Tribal Affairs, Government of India.**
- It was established under the **Multi-state co-operative societies act 1984** under the former Ministry of Welfare.
- Later it came under the control of the Ministry of Tribal affairs.
- In order to empower the downtrodden tribal community it started the procurement of tribal art and craft items firstly in 1999 through its retail outlet called **TRIBES INDIA**.

World Bank's STARS project

Context

- The Union Cabinet has approved a project **partially funded by the World Bank** to carry out a **reform agenda in the governance of school education,** and **improve data and assessment** systems at the national level, as well as teaching and learning outcomes in six States, especially for early childhood and vocational education.
- The project includes an **emergency response component** to help the **government respond to disaster situations** which lead to school closures and loss of learning.
- **STARS Project:**
  o The STARS project seeks to support the states in developing, implementing, evaluating and improving interventions with direct linkages to improved education outcomes.
  o At the state level, the project envisages strengthening early childhood education and foundational learning, strengthening classroom instruction and remediation through teacher development and school leadership and strengthening vocational education.
  o The Strengthening Teaching-Learning and Results for States (STARS) project will have a total project cost of ₹5,718 crore, with the World Bank's support amounting to about ₹3,700 crore ($500 million).
- A major component of the project is the establishment of **PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development)** as a National Assessment Centre.
  o Included in the National Education Policy 2020, this autonomous institution under the Union Education Ministry will set norms for student assessment and evaluation for all school boards across the country, most of which currently follow norms set by State governments.
  o It will also guide standardized testing to monitor learning outcomes at the State and national levels, according to the NEP.
- The other major initiative at the national level is to strengthen the Education Ministry's data systems to capture information on the retention, transition and completion rates of students.
- The project also aims to focus on initiatives of PM e-Vidya, Foundational Literacy and Numeracy Mission and National Curricular and Pedagogical Framework for Early Childhood Care and Education as part of the Atmanirbhar Bharat Abhiyan.
- At the State level, the project seeks to improve education outcomes and school-to-work transition strategies for better labor market outcomes in Himachal Pradesh, Rajasthan, Maharashtra, Madhya Pradesh, Kerala and Odisha.

Global Hunger Index, 2020

Context

- It was recently published by Concern Worldwide and Welthungerhilfe

Details of the report

- India **ranked 94 among 107 nations** in the Global Hunger Index 2020 and is in the **'serious' hunger category** with experts blaming **poor implementation processes, lack of effective monitoring, siloed approach in tackling malnutrition and poor performance** by large states behind the low ranking.
- Last year, India's rank was **102 out of 117 countries.**
- The neighboring Bangladesh, Myanmar and Pakistan too are in the 'serious' category but **ranked higher than India** in this year's hunger index.
- While Bangladesh ranked 75, Myanmar and Pakistan are in the 78th and 88th position.
- Nepal in 73rd and Sri Lanka in 64th position are in 'moderate' hunger category, the report showed.
- According to the report, **14 percent of India's population is undernourished**.

- It also showed the country recorded a **37.4 percent stunting rate** among children under **five and a wasting rate of 17.3 per cen**t. The **under-five mortality rate stood at 3.7 per cent**.
- The performance of large states like Uttar Pradesh, Bihar and Madhya Pradesh need to be improved to see an overall change of India's ranking.

Suggestions for tackling hunger

- Safeguard and promote **access to nutritious, safe and affordable diets**; invest in improving **maternal and child nutrition** through pregnancy, **infancy, and early childhood**; **re-activate and scale-up services** for the early detection and treatment of child wasting; maintain the provision of **nutritious and safe school meals** for vulnerable children and expand social protection to safeguard access to nutritious diets and essential service.
- Hunger and under nutrition cannot and **should not be fixed by mere calorie provision**. All stakeholders steered by robust leadership must pay attention to making balanced healthy diets which are climate-friendly, affordable and accessible to all.

About the Index

- The Global Hunger Index (GHI) is a tool for comprehensively measuring and tracking hunger at global, regional, and national levels.
- GHI scores are based on the values of four component indicators:
  - **Undernourishment:** Share of the population with insufficient caloric intake,
  - **Child wasting**: Share of children under age five who have low weight for their height, reflecting acute under nutrition,
  - **Child stunting**: Share of children under age five who have low height for their age, reflecting chronic under nutrition, and
  - **Child mortality:** Mortality rate of children under age five, partly reflecting the fatal mix of inadequate nutrition and unhealthy environments.
- Based on the values of the four indicators, the GHI determines hunger on a 100-point scale where 0 is the best possible score (no hunger) and 100 is the worst. Each country's GHI score is classified by severity, from low to extremely alarming.

UNICEF Report

Context

- According to a new World Bank Group and UN Children's Fund (UNICEF) analysis, **one in six children were living in extreme poverty** before the COVID-19 pandemic began.

Findings of the report

- It notes that **sub-Saharan Africa**, accounts for **two-thirds of children living in households** that struggle to survive on an **average of $1.90 a day or less per person**, the international measure for extreme poverty, while South Asia accounts for nearly a fifth of these children.
- The number of children living in **extreme poverty decreased moderately, by 29 million**, between 2013 and 2017.
- UNICEF and the World Bank Group warn that any **progress made in recent years has been "slow-paced, unequally distributed, and at risk"** due to the economic impact of the pandemic.
- Although children make up around a third of the global population, around **half of the extreme poor are children.**

UNICEF

- UNICEF, also known as the **United Nations Children's Fund**, is a United Nations agency responsible for providing humanitarian and developmental aid to children worldwide.
- The agency is among the **most widespread and recognizable social welfare organizations** in the world, with a presence in 192 countries and territories.
- UNICEF's activities include **providing immunizations and disease prevention**, **administering treatment for children and mothers with HIV**, enhancing childhood and maternal nutrition, i**mproving sanitation, promoting education, and providing emergency relief** in response to disasters.
- UNICEF is the successor of the **International Children's Emergency Fund (ICEF)**, created in 1946 by the U.N. Relief Rehabilitation Administration to provide immediate relief to children and mothers affected by World War II.

ASER survey

- The ASER survey provides a glimpse into the levels of learning loss that students in rural India are suffering, with varying levels of access to technology, school and family resources resulting in a digital divide in education.

Findings of the survey

- About 20% of rural children have no textbooks at home.
- Inter-state variation:
  - In Andhra Pradesh, less than 35% of children had textbooks, and only 60% had textbooks in Rajasthan.
  - More than 98% had textbooks in West Bengal, Nagaland and Assam.
- In the week of the survey, about one in three rural children had done no learning activity at all.

- About **two in three had no learning materials** or activity given by their school that week, and only one in ten had access to live online classes.
- Levels of **smart phone ownership have almost doubled from 2018**, but a **third of children with smartphone access still did not** receive any learning materials.
- It found that **5.3% of rural children aged 6-10 years** had **not yet enrolled in school** this year, in comparison to just 1.8% in 2018.
  - This seems to indicate that due to the **disruptions caused by the pandemic, families are waiting for the physical opening** of schools to enroll their youngest children, with about 10% of six-year-olds not in school.
- Among 15-16-year-olds, however, enrolment levels are actually **slightly higher than in 2018**.
- **Shift towards government school:**
  - Enrolment patterns also show a **slight shift toward government schools, with private schools seeing a drop in enrolment** in all age groups.
- Smartphone:
  - In 2018, ASER surveyors found that about 36% of rural households with school-going children had smartphones.
  - By 2020, that figure had spiked to 62%. About 11% of families bought a new phone after the lockdown, of which 80% were smartphones.
- **WhatsApp was by far the most popular mode of transmitting learning materials** to students, with 75% of students who got some input receiving it via the messaging app.

About ASER
- ASER is a **nationwide survey of rural education** and **learning outcomes** in terms of reading and arithmetic skills that has been conducted by the **NGO Pratham for the last 15 years**.
- This year, the survey was **conducted via phone calls**, reaching 52,227 rural households with school age children in 30 States and Union Territories.

INTERNATIONAL RELATIONS

India-Central Asia Dialogue

Context
- The 2nd meeting of the India-Central Asia Dialogue was held under the chairmanship of the External Affairs Minister of India.

Participants
- Foreign Ministers of the Republic of **Kazakhstan**, Republic of **Tajikistan**, **Turkmenistan** and Republic of **Uzbekistan** as well as First Deputy Foreign Minister of the **Kyrgyz** Republic participated in the meeting.
- Acting Foreign Minister of the Islamic Republic of **Afghanistan** attended the meeting as a special invitee.

Background
- 1st meeting of the India-Central Asia Dialogue was held in 2019 in **Uzbekistan.**
- **Outcome:** It established a platform for strengthening cooperation between India and the Central Asian countries in political, security, economic and commercial, development partnership, humanitarian

and cultural spheres as well as exchanging views on regional and international issues of mutual interest and enhancing cooperation under the framework of UN and other multilateral fora.
- **Importance:** It called for building a comprehensive and enduring India-Central Asia partnership on the basis of their historical, cultural and civilizational bonds as well as traditionally close people-to-people contacts.

Key outcomes of 2nd meet
- It emphasized the need to continue close cooperation between the Sanitary and Epidemiological Services of India and the Central Asian countries in the fight against Covid-19 pandemic.
- Other partners acknowledged
  - India's humanitarian medical assistance to their countries in the fight against Covid-19 pandemic.

- o Welcomed the provision by India of **US$ 1 billion Line of Credit for priority developmental projects** in fields such as connectivity, energy, IT, healthcare, education, agriculture etc.
  - o Welcomed India's offer to provide grant assistance for implementation of High Impact Community Development Projects (HICDP) for furthering socio-economic development in the countries of the region.
  - o Launch of the **India-Central Asia Business Council (ICABC)** in New Delhi.
  - o India's efforts to modernize the infrastructure of the Chabahar port in Iran, which could become an important link in trade and transport communications between the markets of Central and South Asia.
- Emphasized the importance of expanding trade and economic cooperation including promoting direct ties between the businesses of India and the Central Asian countries.
- B2B body, ICABC should promote business linkages, understanding of taxation, business regulations and incentivize trade, business and investment, especially in the area of Small and Medium Enterprises.
- Emphasized the importance of improving the logistics network of the region and promoting joint initiatives to create regional and international transport corridors.
- Condemned terrorism in all its forms and reaffirm their commitment to combat this menace by destroying terrorist safe-havens, networks, infrastructure and funding channels.
- Underlined the need for every country to ensure that its territory is not used to launch terrorist attacks against other countries.
- Welcomed Afghanistan participation and called for the settlement of the Afghan conflict on the **principle of Afghan-led, Afghan-owned and Afghan-controlled peace process.**
- Increasing tourism arrivals, creating tourism trails across the region, making visa process simpler and encouraging investment in tourism infrastructure was emphasized.

India-USA 2+2 Dialogue 2020

Context
Third edition of the Indo-U.S. 2+2 Dialogue were held in New Delhi.

Key highlights
1. To expand cooperation under the 2+2 framework and to realize the full potential of the U.S.-India Comprehensive Global Strategic Partnership, following pacts were signed:
- **Basic Exchange and Cooperation Agreement for Geo-Spatial cooperation (BECA):** It will allow sharing of high-end military technology, classified satellite data and critical information, expanded geospatial information between two armed forces.
- India and the U.S. also sealed aMoU on **Technical Cooperation in Earth Observations and Earth Sciences.**
- An agreement to extend duration of the MoU regarding the **Global Center for Nuclear Energy Partnership.**
- An agreement on electronic exchange of customs data and a letter of intent regarding cooperation in traditional Indian medicines.
- Pact to facilitate cooperation in Ayurveda.

2. Chinese aggression: In context of Indian and Chinese forces standoff in eastern Ladakh, United States assured that it will stand with the people of India as they face threats to their sovereignty and their liberty.

3. Indo-Pacific region: They emphasised that the Code of Conduct in the South China sea should not prejudice the legitimate rights and interests of any nation in accordance with international law". The two sides decided to expand joint capacity building activities with partner countries in the Indo-Pacific region.

4. Afghanistan issue: The two sides also discussed the status of Afghanistan and supported an Afghan-led and Afghan-owned peace process.

Conclusion
- India & the U.S. concluded another successful 2+2 Ministerial to further expand U.S.-India relationship.

> **2+2 Dialogue mechanism**
> - The 'two plus two dialogue' is an expression used to indicate that two appointed ministers from each country, (**ministers of defence and external affairs in India's case**) will meet up to discuss the two countries' strategic and security interests.
> - **Goal:** To establish a diplomatic conversation between the two countries'.
> - India conduct 2+2 dialogue with U.S., Japan and Australlia.

Sudan and Israel to normalise relations

Context
- Sudan and Israel agreed to normalize relations, in a **U.S.-brokered deal** to end decades of hostility.
- It makes Sudan, technically at war with Israel since its 1948 foundation, **fifth Arab** country to recognize Israel's right to exist, after **Egypt** in 1979**, Jordan** in 1994, and **Bahrain and the United Arab Emirates** in 2020.
- Unlike the latter two, Sudan had sent troops to fight against Israel in major Arab-Israeli wars and considered Israel an enemy state.

- **Impact of this move**: It will benefit the Sudanese people economically, as U.S. government removed Sudan from its list of countries that sponsor terrorism.
- It is not clear if the deal establishes full diplomatic relations between the two nations.
- **Other countries stand:** Germany, Egypt, the United Arab Emirates, Bahrain, welcomed the deal as a boost to stability in the West Asia.
- **Palestine stand:** It strongly condemned the deal, echoing their rejection of Israel's normalization accords with the Arab nations.
- **Iran,** which has been a supporter of the Palestinian cause, said Sudan had paid a "shameful" price to be removed from the "phony" blacklist.

India's stand

- It welcomed the removal of Sudan from the US list of state sponsors of terrorism and the country's normalization of relations with Israel.
- India's relations with Sudan are "historic and special, and forged on the basis of shared values and close people-to-people contacts".

Chair of ILO governing body: India

Context

- India assumed the role of chair of the International Labour Organisation's governing body for the period of October 2020 till June 2021.

Why it matters?

- It is taking up the role after a **gap of 35 years**.
- It would provide an opportunity to interact with the senior officials and social partners of the member states.
- It will also provide a platform to appraise participants of the transformational initiatives taken by the government in removing the rigidities of the labour market besides making its intention clear about universalisation of social security to all workers whether in the organised or unorganised sector.

> **International Labour Organization (ILO)**
> - It is a United Nations agency whose mandate is to **advance social and economic justice through setting international labour standards.**
> - It is the first and **oldest specialised agency** of the UN.
> - ILO's international labour standards are broadly aimed at ensuring accessible, productive, and sustainable work worldwide in conditions of freedom, equity, security and dignity.
> - Within the UN system ILO has a **unique tripartite structure**: all standards, policies, and programmes require discussion and approval from the representatives of governments, employers, and workers.
> - ILO's three main bodies:
>   - **International Labour Conference,** which meets annually to formulate international labour standards;
>   - **Governing Body**, it is apex executive body that decides on matters of policy, agenda and budget as well as elects the Director-General.
>   - **International Labour Office**, the permanent secretariat that administers the organization and implements activities.

Referendum in New Caledonia

Context

- The South Pacific archipelago of New Caledonia voted against independence from France for the second time.

New Caledonia

- New Caledonia became a French colony in 1853.
- Tensions have run deep between pro-independence **indigenous Kanaks** and **descendants of colonial settlers** who remain loyal to Paris.
- Current referendum was the second of up to three permitted under the terms of the 1998 **Noumea Accord**
  - an agreement enshrined in France's constitution and which set out a 20-year path towards decolonisation.
- The island chain already enjoys a large degree of autonomy but depends heavily on France for matters such as **defence and**

education.

- New Caledonia lies some 1,200 km (750 miles) east of Australia and 20,000 km (12,500 miles) from Paris.
- Under French colonial rule the Kanaks were confined to reserves and excluded from much of the islands economy.
- The first revolt erupted in 1878, after the discovery of large nickel deposits that are today exploited by French miner.
- Its economy is underpinned by annual French subsidies of some 1.3 billion euros ($1.5 billion) and nickel deposits that are estimated to represent 25% of the world's total, and tourism.
- For a third referendum to take place, a third of the local assembly in New Caledonia must vote in favour of one.

New Development Bank

Context

- New Development Bank, also known as BRICS Bank has approved infrastructure projects worth 741 million dollars in India.

The New Development Bank (NDB)

- Formerly referred to as the **BRICS Development Bank**, is a multilateral development bank established by the BRICS states (Brazil, Russia, India, China and South Africa).
- NDB support **public or private projects** through loans, guarantees, equity participation and other financial instruments."
- It cooperate with international organizations and other financial entities and provide technical assistance for projects to be supported by the Bank.
- The Agreement on the NDB specifies that **"every member will have one vote, No one would have any veto powers".**
- NDB is currently headquartered in BRICS Tower in Shanghai, China.
- According to the NDB's General Strategy, **sustainable infrastructure development** is at the core of the Bank's operational strategy for 2017-2021.

Food and Agriculture Organization (FAO)

Context

- 16 October 2020, World Food Day marks the 75th anniversary of the Food and Agriculture Organization (FAO) of the United Nations.
- FAO's mission to end hunger and nourish the world has been made more relevant because of another global scourge - the COVID-19 pandemic.

Food and Agriculture Organization (FAO)

- It is a **specialized agency of the United Nations** that leads international efforts to defeat hunger.
- **Goal:** To achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.
- **Budget:** The FAO's Regular Programme budget is funded by its members, through contributions set at the FAO Conference.
- It helps governments and development agencies coordinate their activities to improve and develop agriculture, forestry, fisheries, and land and water resources.
- It conducts research, provides technical assistance to projects, operates educational and training programs, and collects data on agricultural output, production, and development.
- FAO and the World Health Organization created the **Codex Alimentarius Commission** in 1961 to develop food standards, guidelines and texts.
- FAO created the **International Plant Protection Convention** in 1952 to prevent the international spread of pests and plant diseases in both cultivated and wild plants.

United Nations Alliance of Civilizations (UNAOC)

Context

- The United Nations Alliance of Civilizations (UNAOC) has condemned the beheading of a teacher in the northwestern suburbs of Paris in France.

UNAOC

- It is an initiative that seeks **to galvanize international action against extremism** through the forging of international, intercultural and interreligious dialogue and cooperation.
- The Alliance places a particular emphasis on **defusing tensions between the Western and Islamic worlds.**
- The initiative was first proposed by the Prime Minister of Spain, at the 59th General Assembly of the United Nations (UN) in 2005.
- It aims to **bridge divides and promote harmony among the nations**, all with a view toward preventing conflict and promoting social cohesion.

Feni Bridge connecting India and Bangladesh

Context

- The 1.8 kilometre long Fenibridge connecting Sabrum in India with Ramgarh in Bangladesh will be completed by December this year.
- It will ease the transportation of goods from Chattogram and Kolkata ports.
- An integrated check post is also proposed to be built near Sabrum.
- Tripura will act as the gateway of the 'Act East Policy' of the government.

Feni River

- It is a river in southeastern **Bangladesh and Tripura** state of India.
- It is a **trans-boundary river** with an ongoing dispute about water rights.
- The Feni River originates in **South Tripura** district and enters Bangladesh.

BUILDING BRIDGES

India building a bridge over Feni river connecting Sabroom to Ramgarh

Bridge to be completed before 2021, reduce the nearest port from 2,200 km (Haldia) to 70 km (Chittagong)

About 50 km of road in Bangladesh in poor condition

65th Anniversary of Bandung Conference: NAM

Context

- 2020 marked the 65th anniversary of the landmark Bandung Conference that resulted in the adoption of the founding principles of the Non-Aligned Movement.

Non-Aligned Movement (NAM)

- It is a forum of 120 developing world states that are not formally aligned with or against any major power bloc.
- Drawing on the principles agreed at the Bandung Conference in 1955, the Non-Aligned Movement was established in 1961 in Yugoslavia through an initiative of the Indian Prime Minister Jawaharlal Nehru and other leaders.

Member countries
Observer countries

- Purpose: To ensure "the national independence, sovereignty, territorial integrity and security of non-aligned countries" in their "struggle against imperialism, colonialism, neo-colonialism, racism, and all forms of foreign aggression, occupation, domination, interference or hegemony as well as against great power and bloc politics".
- The countries of the Non-Aligned Movement represent nearly two-thirds of the United Nations' members and contain 55% of the world population.
- Membership is particularly concentrated in countries considered to be developing or part of the Third World, though the Non-Aligned Movement also has a number of developed nations.

The ten principles of Bandung conference

- Respect of fundamental human rights and of the objectives and principles of the Charter of the United Nations.
- Respect of the sovereignty and territorial integrity of all nations.
- Recognition of the equality among all races and of the equality among all nations, both large and small.
- Non-intervention or non-interference into the internal affairs of another -country.
- Respect of the right of every nation to defend itself, either individually or collectively, in conformity with the Charter of the United Nations.
  - Non-use of collective defense pacts to benefit the specific interests of any of the great powers.
  - Non-use of pressures by any country against other countries.
- Refraining from carrying out or threatening to carry out aggression, or from using force against the territorial integrity or political independence of any country.
- Peaceful solution of all international conflicts in conformity with the Charter of the United Nations.
- Promotion of mutual interests and of cooperation.
- Respect of justice and of international obligations.

> **Bandung Conference**
> - The first large-scale **Asian–African Conference**—also known as the Bandung Conference was a meeting of Asian and African states, most of which were newly independent,
> - It took place on 18–24 April 1955 in Bandung, Indonesia.
> - **Aim:** To promote Afro-Asian economic and cultural cooperation and to oppose colonialism or neocolonialism by any nation.
> - The conference was an important step towards the eventual creation of the Non-Aligned Movement.

Pakistan re-elected to the UNHRC

Context

- Pakistan has been re-elected to the United Nations Human Rights Council despite opposition from activist groups over its abysmal human rights records.
- With its re-election, Pakistan will continue as a member for another three-year term commencing on January 1, 2021.

About United Nations Human Rights Council

- It is a United Nations body whose mission is **to promote and protect human rights around the world.**
- The UNHRC has 47 members elected for staggered **three-year terms** on a regional group basis.
- The headquarters of UNHRC is in Geneva, Switzerland.
- The UNHRC investigates allegations of breaches of human rights in United Nations member states.
- It addresses important thematic human rights issues such as
  o freedom of association and assembly,
  o freedom of expression,
  o freedom of belief and religion,
  o women's rights,
  o LGBT rights, and
  o the rights of racial and ethnic minorities.
- The UNHRC was established by the UN General Assembly on 15 March 2006 to **replace the UN Commission on Human Rights** that had been strongly criticised for allowing countries with poor human rights records to be members.

Protests to Coup: Kyrgyzstan

Context

- Protesters have captured key government buildings, including the Parliament house and the presidential office.
- The absconding President has accused the opposition of plotting a coup.

The story so far

- Street protests erupted in Kyrgyzstan following parliamentary election.
- The opposition blamed the votes were rigged as protesters captured several government buildings in the capital Bishkek.
- Kyrgyzstan, often referred to as **Central Asia's only democracy**, had seen violent anti-government protests in the past.
- Sharpening political fault lines were behind the protests in Kyrgyzstan.

Why is Kyrgyzstan important?

- This landlocked Central Asian country that shares a long border with China has been key to the strategic plans of both Russia and China.
- Moscow sees the region as its backyard and plays hard politics to retain its influence.
- For China, the country, located at the centre of Eurasia, is a vital link in its Belt and Road Initiative. China has built road and rail networks with Kyrgyzstan and Uzbekistan.
- During the early stages of the Afghan war, the U.S. had used Kyrgyzstan for refuelling and other logistical purposes. The U.S. base was shut down in 2014 by Parliament.

Where do the protests leave Russia?

- Kyrgyzstan is a member of the Russia-led Collective Security Treaty Organisation and hosts a Russian air base.
- While Russia has cultivated strong ties with all political factions in Kyrgyzstan, radical political changes could throw up opportunities for its rivals.
- The crisis poses an immediate foreign policy challenge to Russia's Vladimir Putin

India invited to join the Blue Dot Network

Context

- A bipartisan group of Senators had written to India's Ambassador to the United States to join the Blue Dot Network.

What is Blue Dot Network?

- It is a U.S.-led collaboration with Australia and Japan that supports private-sector led infrastructure financing opportunities in response to China's Belt and Road Initiative (BRI).

- The Blue Dot Network (BDN), was launched in 2019 by the U.S., Japan and Australia.
- It is an initiative that will bring together governments, the private sector and civil society to certify projects that uphold global infrastructure principles.
- Given that three Quad partners are already involved in BDN, U.S. encourage India's participation in this promising initiative.

What is the significance of joining it?
- Blue Dot Network will attract private capital to infrastructure projects in developing and emerging economies.
- **Quality assured:** The infrastructure projects will have to follow the
  - **G-20 principles for Quality Infrastructure Investment**, aimed at sustainable lending and borrowing,
  - **G7 Charlevoix Commitment on Innovative Financing for Development**, and
  - **Equator Principles**, which mandate financial institutions to assess and manage environmental and social risks in a given projects.
- Projects that aim to be certified under the Blue Dot Network will have to give an undertaking that they adhere to these principles.
- Access to private and public financing institutions will help mitigate financing risks, acting as an impetus for developing countries like India to smoothly undertake development projects domestically as well as internationally.

Extending new start treaty

Context
- Russian President proposed a one-year extension without conditions of the major nuclear arms reduction accord between Russia and the U.S.

The New Strategic Arms Reduction Treaty (New START) deal
- It was signed in April 2010 but went into force in February 2011.
- It lasts for ten years but with a possible extension.
- It is the only treaty limiting the world's two largest nuclear weapons arsenals.
- New START, which requires rigorous monitoring and verification, is set to expire in February 2021 unless the U.S.

and Russian presidents agree to extend it.

- President Vladimir Putin has proposed an extension of five years without conditions, but U.S. remains undecided.

Why U.S. is unwilling to extend it?

- It wants a new trilateral arms control agreement, that includes Russia's tactical nuclear weapons and China's smaller stockpile.

What's next?

- China opposed to a trilateral deal.
- As there is not enough time to negotiate and ratify a new arms control deal before New START expires.
- There is need for at least five-year extension of New START, which would provide a foundation for a more ambitious successor agreement.

ECONOMY

Powergrid

Context

- Power Grid Corporation of India Ltd. (POWERGRID) has signed a Memorandum of Understanding (MoU) with the Ministry of Power, Govt. of India.
- The MoU includes targets related to various parameters such as Financial, Physical, Project execution, etc. to be achieved by POWERGRID during the FY 2020-21.

About Powergrid

- The Power Grid Corporation of India Limited (POWERGRID), is an Indian state-owned Maharatna company headquartered in Gurugram, India.
- It is engaged mainly in Transmission of Power. POWERGRID transmits about 50% of the total power generated in India on its transmission network.
- POWERGRID also operates a telecom business under the name POWERTEL.

Kamath panel report

Context

- The Supreme Court asked the Union government and the Reserve Bank of India (RBI) about the steps taken to implement the K.V. Kamath Committee report on recommendations to bail out sectors affected by the COVID-19 stress.

About the report

- The Kamath committee has recommended to take into account five specific financial ratios and sector-specific thresholds for each ratio in respect of 26 sectors while finalising the resolution plans.
- The RBI-appointed committee suggested that lenders consider at least five financial parameters before taking a decision on restructuring.
  - Total outside liabilities /adjusted tangible net worth
  - Total debt/Ebitda Current ratio
  - Current Ratio
  - Debt service coverage ratio
  - Average debt service coverage ratio

Additional Tier-1 bonds

Context

- Market regulator Securities and Exchange Board of India (SEBI) tightened its regulations of additional tier-1 bonds or AT-1 bonds and ensured that these risky instruments are less accessible to retail investors.

About the regulations

- It was done by ensuring that banks can issue these bonds
  - only on electronic platforms,
  - only institutional investors could subscribe to them, and
  - Introduced a minimum allotment size and trading lot size of □1 crore.
- This change in the regulation comes after several mutual funds and retail investors were caught on the wrong foot while investing in additional tier-1 bonds of Yes Bank.
- SEBI stated that issuing AT1 bonds must be done compulsorily on the electronic book provider platform.
- Issuers and stock exchanges have to ensure that only qualified institutional buyers are issued these bonds.
- Minimum allotment and trading lot size shall be Rs 1 crore.
- AT1 Bonds:

- o Also known as perpetual non-cumulative preference shares, innovative perpetual debt instruments, and perpetual debt instruments. Typically, these are issued by banks to augment their capital base.
- Need:
  - o In March, several investors were caught off guard after the Reserve Bank of India (RBI) proposed writing down AT1 bonds issued by the troubled YES Bank, forcing bondholders to take a 100-per cent haircut and leading to losses of over Rs 10,000 crore.

About SEBI
- The Securities and Exchange Board of India (SEBI) is the regulator of the securities and commodity market in India owned by the Government of India.
- It was established on 12 April 1988 and given Statutory Powers on 30 January 1992 through the SEBI Act, 1992.
- SEBI has to be responsive to the needs of three groups, which constitute the market:
  - o issuers of securities
  - o investors
  - o market intermediaries
- SEBI has three functions rolled into one body: quasi-legislative, quasi-judicial and quasi-executive.
- SEBI has been vested with the following powers:
  - o to approve by−laws of Securities exchanges.
  - o to require the Securities exchange to amend their by−laws.
  - o inspect the books of accounts and call for periodical returns from recognised Securities exchanges.
  - o inspect the books of accounts of financial intermediaries.
  - o compel certain companies to list their shares in one or more Securities exchanges.
  - o registration of Brokers and sub-brokers

Poverty and Shared Prosperity Report

Context
- The World Bank's biennial Poverty and Shared Prosperity Report: Reversals of Fortune was released recently.

Findings of the report
- For the first time in two decades, global poverty rate would go up due to the novel coronavirus disease (COVID-19) pandemic.
- The multilateral body couldn't gauge the real poverty situation in the world because India did not have the latest data.
- The report stated "The lack of recent data for India severely hinders the ability to monitor global poverty,"
- Extreme poverty: living on less than $1.90 a day is likely to affect between 9.1% and 9.4% of the world's population in 2020.

Poverty in India
- India, along with Nigeria, is considered to have the largest number of the poor in the world.
- India tops the global list in terms of absolute number of poor, going by the last national survey of 2012-13. The country accounted for **139 million of the total 689 million people** living in poverty in 2017.
- India was to release its latest household consumer expenditure survey data by the National Statistical Office (NSO, 75th round) for 2017-18 last year. Consumption expenditure is taken as a proxy for gauging income levels in India.
- But the Union government didn't release this data, citing 'quality'.
- The latest data on poverty in India is from a survey done in 2011-12, or almost a decade-old. This was based on a household consumption expenditure survey (68th round) done by the NSO, the nodal agency that conducts these surveys.

About the report
- It is a biennial report of the World Bank.
- It provides a global audience with the latest and most accurate estimates on trends in global poverty and shared prosperity.

Natural Gas Marketing Reforms

Context
- The Cabinet Committee on Economic Affairs recently approved 'natural gas marketing reforms' with an aim to standardize the procedure to discover the price of gas sold in the market.

Details
- The policy has also permitted affiliate companies to participate in the bidding process in view of the open, transparent and electronic bidding. This will facilitate and promote more competition in marketing of gas.
- Rebidding would be needed in case only affiliates participated, and that there were no other bidders.
- The policy would bring uniformity to the bidding process across various contractual regimes and policies to avoid ambiguity and contribute towards ease of doing business.

- The policy will also grant marketing freedom to Field Development Plans of those Blocks in which Production Sharing Contracts already provide pricing freedom.
- The government expects the move to spur production of, infrastructure for and marketing of natural gas, while also creating jobs in gas-consuming sectors, including in MSMEs.

World Cotton Day

Context
- Union Minister of Textiles and Women & Child Development launched the 1st ever Brand & Logo for Indian Cotton on 2nd World Cotton Day on 7th October, 2020.
- India's premium Cotton would be known as 'Kasturi Cotton' in the world cotton Trade. The Kasturi Cotton brand will represent Whiteness, Brightness, Softness, Purity, Luster, Uniqueness and Indianness.
- Inaugural session of the webinar organised by TEXPROCIL and CITI on the theme of "NEW-LOOK COTTON" to facilitate exchange of ideas on the emerging scenarios in cotton usage and application.

About cotton
- Successful cultivation of cotton requires a long frost-free period, plenty of sunshine, and a moderate rainfall, usually from 60 to 120 cm.
- Soils usually need to be fairly heavy, although the level of nutrients does not need to be exceptional.
- These conditions are met within the seasonally dry tropics and subtropics in the Northern and Southern hemispheres.
- Production of the crop for a given year usually starts soon after harvesting the preceding autumn.

Cotton and India
- Cotton is one of the principal commercial crops of India and it provides livelihood to about 6.00 million cotton farmers.
- India is the 2nd largest cotton producer and the largest consumer of cotton in the world.
- India produces about 6.00 Million tons of cotton every year which is about 23% of the world cotton.
- India produces about 51% of the total organic cotton production of the world, which demonstrates India's effort towards sustainability.
- Cotton Corporation of India (CCI) made ever highest Minimum Support Price (MSP) operation of cotton and hopeful that during the new cotton season, the procurement under MSP will be increased.
- Leveraging the technology, a mobile app, "Cott-Ally" has been developed by CCI for providing latest news regarding weather conditions, Crop situation and best farm practices.
- Discount of Rs.300/- per candy is being offered by CCI in its regular sale to MSME mills, Khadi and Village industry, Cooperative sector mills to enhance their competitiveness and efficiency.

Targeted long-term repo operation (TLTRO)

Context
- RBI will conduct 'on-tap' targeted long-term repo operation (TLTRO) for a total amount of up to □1-lakh crore can help push up credit growth, according to experts.
- This will open up more investment opportunities for banks, according to State Bank of India's research report "Ecowrap".
- The TLTRO will be for up to three years and for a total amount of up to Rs 1 trillion at a floating rate linked to the policy repo rate for banks.
- The sectors which could benefit from this move include construction, real estate, and microfinance. RBI will provide these funds under on-tap targeted long-term repo operations (TLTRO) at a floating rate linked to the policy rate for up to three years. At present, the repo rate is 4 percent.

Importance for the economy
- LTROs provide banks with access to cheaper capital from the RBI. This, in turn, encourages them to lend more and spur economic activity.
- They can also invest these long-term funds in assets that yield better returns to improve profitability.
- As banks provide government securities as collateral, the demand for such government bonds increases and helps in lowering yield.

About LTRO
- LTRO lets banks borrow one to three-year funds from the central bank at the repo rate, by providing government securities with similar or higher tenure as collateral.
- Targeted Long-Term Repo Operations (TLTRO), banks can invest in specific sectors through debt instruments (corporate bonds, commercial papers, and non-convertible debentures (NCDs)) to push the credit flow in the economy.
- It is called 'Targeted' LTRO as in this case, the central bank wants banks opting for funds under this option be specifically invested in investment-grade corporate debt.
- This helps banks get funds for a longer duration as compared to the short-term (up to 28 days) liquidity provided by the RBI through other tools such as liquidity adjustment facility (LAF) and marginal standing facility (MSF).

Nobel Prize in Economics

Context

- The Nobel Prize 2020 in Economic Sciences was awarded to **Paul R. Milgrom and Robert B. Wilson** for improvements to auction theory and inventions of new auction formats.

About their work

- They **studied how auctions work.** They also used their insights to design new auction formats for goods and services that are difficult to sell in a traditional way, such as radio frequencies.
- They showed why **rational bidders tend to place bids below their own best estimate** of the common value which could mean the item goes for less than it's worth and perhaps not to the buyer who most wants it, neither of which is supposed to happen if the auction is working properly.

Rashtriya Kamdhenu Aayog (RKA)

Context

- Describing cow dung as "anti-radiation", Rashtriya Kamdhenu Aayog (RKA) chairman unveiled a "chip" made of cow dung and claimed that it reduces radiation from mobile handsets significantly.
- The "chip", named Gausatva Kavach, is manufactured by Rajkot-based Shrijee Gaushala.

About RKA

- It comes under the Ministry of Fisheries, Animal Husbandry & Dairying.
- It was established by the Centre on February 6, 2019.
- It is aimed at "conservation, protection and development of cows and their progeny". It was announced in the Union Budget 2019-20.

India Energy Modeling Forum

Context

- It was jointly launched by **NITI Aayog** and **United States Agency for International Development (USAID)** under the US–India Strategic Energy Partnership. NITI Aayog has recently announced its governing structure.

About the forum

- It is part of the Sustainable Growth pillar of the US–India Strategic Energy Partnership (SEP).
- It aims to **engage Indian researchers, knowledge partners, think tanks** and national and international government agencies and departments for modelling and long-term energy planning.
- The governing structure of IEMF will consist of an **inter-ministerial and a steering committee.**
- The inter-ministerial committee will be **convened by NITI Aayog** and headed by its CEO, and comprise senior officials from the ministries of petroleum and natural gas; power; new and renewable energy; coal; environment, forest and climate change; and department of science and technology.
- This committee will **review the studies/modelling activities** and provide directions and new areas of research.
- The steering committee will comprise representatives of the Government, Industry Associations (FICCI and CII), Academia (IIT Bombay, Ahmedabad, and Delhi), Policy research organizations, think tanks and funding agencies.
- This committee will **shortlist policy issues** to be taken up for study and might form various task forces depending on the specific studies/modelling exercises to be carried out.

Insurance Ombudsman

Context

- The Insurance Regulatory and Development Authority of India (IRDAI) has advised public sector general insurers to appoint a nodal officer each for the 17 insurance ombudsman offices to ensure proper and timely disposal of complaints.

Details

- This follows the ombudsman citing difficulties in dealing with cases of these insurers in the absence of any responsible officer who can liaison with their offices.
- It will be responsible for placing self-contained notes before the Ombudsman within the timeline and ensuring all information/documents called for are submitted in a timely manner.
- The nodal officers have to ensure compliance with the recommendation or award of the Ombudsman within the specified timeline.

About IRDAI

- The IRDAI is an autonomous, statutory body tasked with regulating and promoting the insurance and reinsurance industries in India.
- It was constituted by the Insurance Regulatory and Development Authority Act, 1999.
- The agency's headquarters are in Hyderabad, Telangana, where it moved from Delhi in 2001.

Framework for Regulatory Sandbox

Context

- IFSCA has introduced a framework for "Regulatory Sandbox".

About the framework

- Under this Sandbox framework, entities operating in the capital market, banking, and insurance and financial services space shall be **granted certain facilities and flexibilities to experiment with innovative FinTech solutions** in a live environment with a limited set of real customers for a limited time frame.
- These features shall be **fortified with necessary safeguards** for investor protection and risk mitigation.
- The Regulatory Sandbox shall operate **within the IFSC located at GIFT City**.
- IFSCA has proposed the creation of an **"Innovation Sandbox"**, which will be a testing environment where FinTech firms can test their solutions in isolation from the live market, based on market related data made available by the Market Infrastructure Institutions (MIIs) operating in the IFSC.

SCIENCE & TECHNOLOGY

Congo Fever

Context

- Recently, the Palghar administration asked authorities to remain alert against a possible spread of the Congo fever in the Maharashtra district.

About

- Crimean-Congo haemorrhagic fever is a **viral haemorrhagic fever** usually **transmitted by ticks and livestock animals.**
- It can also be contracted through contact with viraemic animal tissues (animal tissue where the virus has entered the bloodstream) during and immediately post-slaughter of animals.
- Human-to-human transmission can occur resulting from close contact with the blood, secretions, organs or other bodily fluids of infected persons.
- It is **endemic in all of Africa, the Balkans, the Middle East and in Asia.**
- The disease was first described in the Crimea in 1944 and given the name Crimean haemorrhagic fever.
- In 1969 it was recognized that the pathogen causing Crimean haemorrhagic fever was the same as that responsible for an illness identified in 1956 in the Congo.
- The linkage of the two place names resulted in the current name for the disease and the virus.
- There is no vaccine available for either people or animals.
- **Signs and symptoms include:** Headache, high fever, back pain, joint pain, stomach pain, and vomiting. Jaundice, and in severe cases, changes in mood and sensory perception.

FELUDA paper Strip Test

Context

- Union Health Ministry said that **FELUDA paper strip test** will be soon rolled out for SARS-CoV-2 diagnosis.

About

> FELUDA, stands for **FNCAS9 Editor-Limited Uniform Detection Assay.** Unlike antigen tests it uses a CRISPR-cas9 based system and therefore more accurate in detecting the virus
>
> CRISPR-cas9 is a **genome-editing tool**. In FELUDA the cas9 enzyme, can be used to hone in on a specific sequence of DNA (in this case unique to the coronavirus) and thereby infer its presence.

A new test in horizon

A COVID-19 test named FELUDA, developed by the Delhi-based CSIR-Institute of Genomics and Integrative Biology, is quicker and cheaper. A lowdown on the test:

Test in time: The paper strip test has been approved for a commercial launch. • ANI

Cost: It is expected to cost between ₹500 and ₹600

Accuracy: Based on tests in over 2,000 patients, it showed **96% sensitivity** (100% sensitivity = all positive samples return positive results) and **98% specificity** (100% specificity = all negative samples return negative results)

Type of sample: Either saliva or blood, but saliva is preferred for testing

Turnaround time: The kit takes 45 minutes to give a result. In comparison, the real-time polymerase chain reaction

(RT-PCR) test takes 1.5 hours; Rapid antigen test takes 30-40 minutes and TruNat test gives results in 60 minutes

Is it similar to the pregnancy color-code test?
The paper strip generates two lines for a positive result and one line in the case of a negative result, much like a pregnancy test kit. However, this is a nucleic acid test and not a protein based one

eVIN network

Context

- The eVIN network is being repurposed for the delivery of the COVID-19 vaccine.

About

- **eVIN (Electronic Vaccine Intelligence Network)** is an indigenously developed technology system in India.
- The network digitizes vaccine stocks and monitors the temperature of the cold chain through a smartphone application.
- It aims to strengthen the evidence base for improved policy-making in vaccine delivery, procurement and planning for new antigens in India.

Implementation

- The technological innovation is implemented by the **United Nations Development Programme (UNDP)** in partnership with **Ministry of Health & Family Welfare under National Health Mission.**

NHM

- The National Health Mission (NHM) encompasses its two Sub-Missions, the National Rural Health Mission (NRHM) and the National Urban Health Mission (NUHM).
- NHM envisages achievement of **universal access to equitable, affordable & quality healthcare services** that are accountable and responsive to people's needs.

New Shepherd

Context

- Recently, a rocket system meant to take tourists to space successfully completed its seventh test launch. It is called New Shepherd.

About

- New Shephard has been named after astronaut Alan Shephard, the first American to go to space.
- It offers flights to space over **100 km above the Earth** and accommodation for payloads.
- It is a rocket system that has been designed to take astronauts and research payloads past the **Karman line – the internationally recognised boundary of space.**
- Aim: To provide easier and more cost-effective access to space meant for purposes such as academic research, corporate technology development and entrepreneurial ventures among others.
- New Shepherd has been built by Amazon founder Jeff Bezos's space company called Blue Origin.
- It will eventually allow space tourists to experience microgravity by taking them over 100 km above the Earth.

COVIRAP

Context

- IIT Kharagpur has developed a low-cost portable unit called COVIRAP for rapid diagnostics of coronavirus, which produces results in under an hour.

About

- The machine employed an **isothermal nucleic acid amplification method,** which did away with need for a thermocycler.
- Once the sample was processed in the machine after being mixed with solutions; paper strips (similar to the pregnancy strips) -- are dipped into it.
- The emergence of coloured lines will depict the presence of the virus.
- The COVIRAP method requires very little equipment, and is ideal for use in rural areas with limited facilities.

Amplification

- Amplification (molecular biology), is a mechanism leading to multiple copies of a chromosomal region within a chromosome arm DNA/RNA.
- Polymerase chain reaction (PCR), a molecular biology laboratory method for creating multiple copies of small segments of DNA.

Thermocycler

- Thermocyclers are instruments used to amplify DNA and RNA samples by the polymerase chain reaction.

Novel solution

A look at how the new COVID-19 testing device works

Virus alert: Researchers with the COVIRAP device at IIT Kharagpur.
▪ SPECIAL ARRANGEMENT

- COVIRAP machine resembles a box and comes with a kit
- Kit has three master mixes which are markers of different genes to confirm the virus
- RNA samples are extracted from **nasal swabs** and mixed with the master mix in tubes
- Tubes are put in the machine which is set at a specific temperature and programmed to run for a fixed period
- Once the heating is over,

it's mixed with another solution and reheated

- A paper strip is dipped into reaction product
- Coloured lines develop, like in a pregnancy kit, to indicate presence or absence of virus
- A smartphone app can grab image of the strip and convey results
- COVIRAP can deliver results in an hour

DIFFERENCES WITH RT-PCR

- While RT-PCR machines can cost up to ₹25 lakh, the COVIRAP machine cost the IIT researchers only ₹5,000
- COVIRAP test kits cost about ₹500
- RT-PCR needs to be operated by a molecular biologist
- COVIRAP can be operated with minimal training

- The thermocycler <u>raises and lowers the temperature</u> of the samples allowing for de-naturation and re-annealing of DNA/RNA with various reagents.

Isothermal nucleic acid amplification method

- In contrast to PCR, isothermal amplification enables rapid and specific amplification of DNA at constant temperature (60-65 °C).

Tubarial Salivary Gland

Context

- Researchers from the Netherlands Cancer Institute have discovered a new pair of salivary glands hidden between the nasal cavity and throat. It has been named as Tubarial Salivary Gland.

About

- The team proposed the name "tubarial glands" as it was found draped over the torus tubarius - the structure that supports the entrance of the auditory tube.
- The glands were about 3.9 centimeters in length on average.

Physiological Function

- The assumption of the physiological function is the **moistening and lubrication of the nasopharynx and oropharynx.**

Until Now:
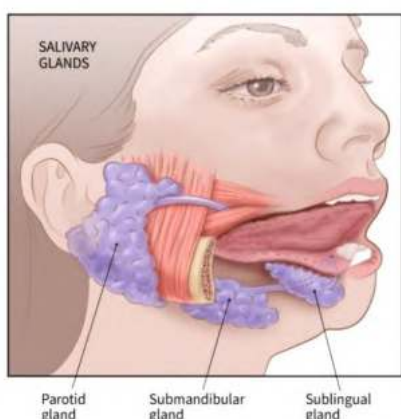
SOFIA

Context

- NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) has confirmed, for the first time, <u>water on the sunlit surface of the Moon</u>.

About

- SOFIA has detected water molecules (H2O) in **Clavius Crater**, one of the largest craters **visible from Earth**, located in the Moon's southern hemisphere.
- Previous observations of the Moon's surface detected some form of hydrogen, but were unable to distinguish between water and its close chemical relative, hydroxyl (OH).
- Data from this location reveal water roughly equivalent to a 12-ounce bottle of water – trapped in a cubic meter of soil spread across the lunar surface.

The observatory

- SOFIA, the Stratospheric Observatory for Infrared Astronomy, is a Boeing 747SP aircraft modified to carry a 2.7-meter Reflecting Telescope.
- Flying into the stratosphere at 38,000-45,000 feet puts SOFIA above 99 percent of Earth's infrared-blocking atmosphere.
- This allows astronomers to study the solar system and beyond in ways that are not possible with ground-based telescopes.
- SOFIA is made possible through a partnership between NASA and the German Aerospace Center (DLR).

Frontier Technologies Cloud Innovation Center

Context

- The National Institution for Transforming India (NITI Aayog) has established a Frontier Technologies Cloud Innovation Center (CIC) with Amazon Web Services (AWS).
- It has such centres across countries like Australia, Bahrain, Canada, France, Germany, South Korea, and the US, including one in partnership with the University of British Columbia.

Aim

- To help address societal challenges through digital innovation.

Details

- The CIC addresses a core mission <u>to identify and deploy leading edge technologies</u> to drive continuous innovation in delivering citizen services.
- The centre will work to identify and prioritize projects as well as <u>collaborate with local leaders, including subject matter experts at the state and district level</u>, to solve critical societal challenges.
- Local enterprises, startups, researchers, and universities in India will experiment and build prototypes on AWS Cloud, and contribute along with the global CIC community dedicated to accelerating societal innovation.

Gyan Circle Ventures

Context

- Recently, Union Minister for Education virtually inaugurated the Gyan Circle Ventures.

About

- It is a a MeitY funded technology business incubator (TBI).
  - ✓ A business incubator is a company that helps new and startup companies to develop by providing services such as management training or office space.
- Gyan Circle Ventures would function as a technology incubation and development of entrepreneurs (TIDE 2.0) incubation center as approved by the Ministry of Information Technology (MeitY).
- Gyan Circle Ventures will serve as a hub for innovation and startups by providing support, in various phases, via investments, infrastructure and mentoring.
- The incubator would leverage the institutions' entrepreneurial spirit via utilizing its intellectual capital.
- It will also engage in using emerging technologies such as Artificial Intelligence (AI), Blockchain, Cyber Physical Systems (CPS), Cyber Security, Internet of Things (IoT), Robotics, etc.
- TBI would have an advisory committee comprising leading industrialists, entrepreneurs and technical experts.
- The incubator will serve as a catalyst for the advancement of society-conscious entrepreneurship and fuel job creation.

ENVIRONMENT

ERIOCAULON

Context

- Scientists have recently discovered two new species of pipeworts in the Western Ghats of Maharashtra and Karnataka.
- The species reported from Sindhudurg district of Maharashtra has been named ***Eriocaulon parvicephalum*** (due to its minute inflorescence size)
- The other reported from Kumta, Karnataka is called ***Eriocaulon karaavalense*** (named after Karaavali, Coastal Karnataka region).
- The medicinal properties of the newly discovered species are yet to be explored.
- Identification of the species is very difficult as they all look similar, which is why the genus is often referred to as a 'Taxonomist's nightmare'.
- Its tiny flowers and seeds make it difficult to distinguish between different species

Pipeworts (Eriocaulon)

- It is a plant group, which completes its life cycle within a small period during monsoon.
- Around 111 species of pipeworts are found in India.
- Most of these are reported from the **Western Ghats and the eastern Himalayas**, and around 70 per cent of them are **endemic** to the country.

Eriocaulon cinereum

- It is well known for its anti-cancerous, analgesic, anti-inflammatory, and astringent properties.

E. quinquangulare

- It is used against liver diseases.

E. madayiparense

- It is an anti-bacterial from Kerala.

Emission norms for Tractors

Context

- The central government has announced the extension of the TREM Stage-IV emission norms.
- The TREM Stage-IV norms for tractors was scheduled to be enforced from October 2020. However, the Indian government has extended the deadline to October 1, 2021.

- The extension has been made to provide some relief to the manufacturers.
- The Central Motor Vehicles Rules, 1989 has been amended by the ministry of road transport and highways to accommodate the extension.

Why emission norm nomenclature amended?

- Government had announced an amendment to the emission norm nomenclature for tractors and construction equipment vehicles.
- This was initiated to avoid confusion between emission norms of other vehicles with the "Bharat Stage" or "BS" prefix against agricultural machinery, construction equipment vehicles and other such equipment.
- This would be applicable for agricultural machinery including agricultural tractors, power tillers and combined harvesters.
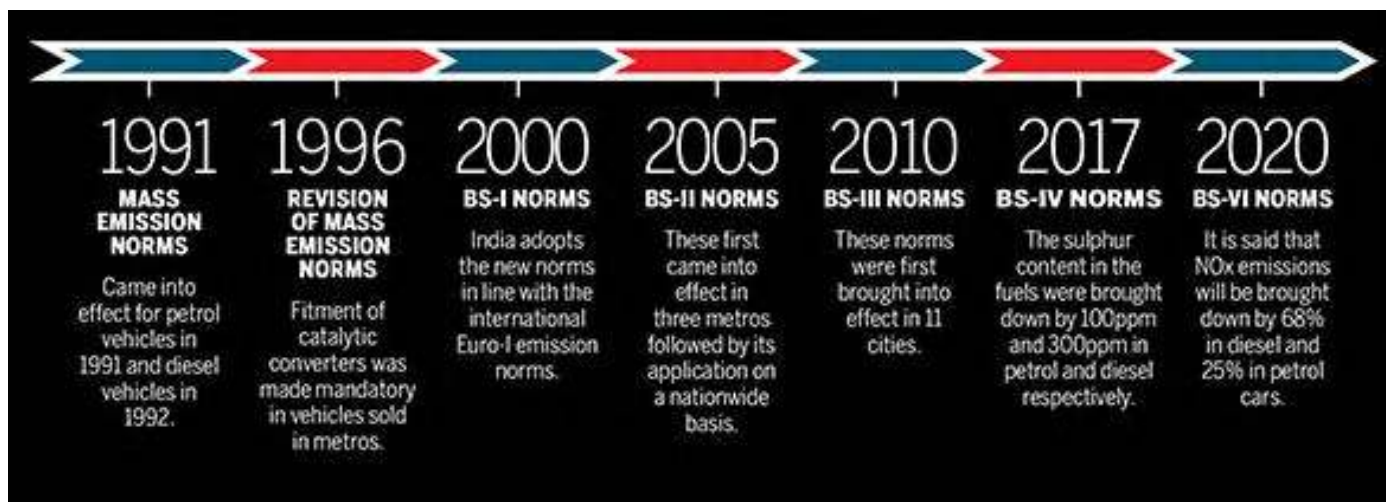
International Barcode of Life (iBOL)

Context

- Cabinet approves Memorandum of Understanding between Zoological Survey of India and International Barcode of Life, a Canadian not-for-profit corporation.
- The MoU will enable ZSI to participate at the Global level programmes like Bioscan and Planetary Biodiversity Mission.
- ZSI and iBOL have come together for further efforts in DNA barcoding,
  - **DNA barcoding** is a methodology for rapidly and accurately identifying species by sequencing a short segment of standardized gene regions and comparing individual sequences to a reference database.

What is iBOL?

- iBOL is a research alliance involving nations that have committed both human and financial resources to enable expansion of the global reference database, the development of informatics platforms, and/or the analytical protocols needed to use the reference library to inventory, assess, and describe biodiversity.

Brahma Kamal flower

Context

- The most revered flower of the Himalayas, Brahma Kamal or the sacred Lotus has started blooming again this year.
- These flowers bloom in Garhwal of Chamoli district.
- Brahma Kamal flowers are used as offering at Nanda Devi Temple.

Brahma Kamal

- Interestingly, this flower blooms only one night in a year, and that too, after sunset.
- It takes two hours or so for it to bloom fully to 8 inches in diameter.
- These flowers carry **medicinal properties**, and for the believers, they are an auspicious and wish-fulfilling nature.
- Brahma Kamal has been named after Brahma, the deity who created the universe.
- It is also called the King of Himalayan Flowers.
- It is also the state flower of Uttarakhand.
- It blooms only in a few homes and is a harbinger of luck and prosperity in such places.

Shivalik Elephant Reserve

Context

- The Ministry of Environment, Forest and Climate Change (MoEF) has asked the Uttarakhand government to consider avoiding sensitive areas of the Shivalik Elephant Reserve while exploring land suitable to use for the expansion of Airport.

What is the issue?

- As the area proposed for diversion is a 'High Conservation Value' area and will cause fragmentation of riverside forests situated between the existing runway and the river.
- The entire proposed forest area for diversion falls within the Shivalik Elephant Reserve and elephant corridors within its 1 km radius.
- Moreover, the notified Kansora-Barkot Elephant Corridor is located within 5 km radius.
- The state government should consider avoiding these sensitive areas and explore alternative lands.
- The mitigation plan proposes construction of elephant proof wall, solar fencing, weed eradication, construction of water holes, purchase of tranquilizing gun and other rescue equipments.

Shivalik Elephant Reserve

- It is located in Uttarakhand.
- It is considered to have one of the highest densities of tuskers found in India. Due to this reason, poaching of elephants was a major threat in these areas.
- constitutes three protected areas, Jim Corbett National Park , Rajaji National Park and Sona-nadi Wildlife Sanctuary apart from other forest divisions.

Asian Elephant

- It is distributed througout the Indian subcontinent and Southeast Asia, from India in the west, Nepal in the north, Sumatra in the south, and to Borneo in the east.
- The Asian elephant is the **largest living land animal in Asia**.
- Since 1986, the Asian elephant has been listed as **Endangered** on the IUCN Red List, as the population has declined by at least 50 percent over the last three elephant generations, which is about 60–75 years.
- It is primarily threatened by **loss of habitat, habitat degradation, fragmentation and poaching**.
- The Asian elephant is listed on **CITES Appendix I**.
    - CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention) is a multilateral treaty to protect endangered plants and animals.

Habitat Loss of Himalayan Brown Bear

Context

A recent study on the Himalayan brown bear (Ursus arctos isabellinus) has predicted a significant **reduction in suitable habitat and biological corridors** of the species in the climate change scenario.

- The study carried out in the western Himalayas by scientists of Zoological Survey of India, predicted a massive **decline of about 73% of the bear's habitat by the year 2050.**
- Scientists suggested an **adaptive spatial planning** of protected area (PAs) network in the western Himalayas for conserving the species.
- There is a need to adopt "preemptive spatial planning of PAs in the Himalayan region for the long-term viability of the species".
- The suitable habitats were mapped outside the PAs and these areas may be prioritized to bring them into the PA network or enhanced protection.

> **Adaptive spatial planning**
> - It is aimed at minimizing the risks and uncertainty of climate change.
> - It broadly refers to conserving the existing landscape and augmenting the fragmented areas of the habitat of the species

Himalayan brown bear

- The Himalayan brown bear is one of the largest carnivores in the highlands of Himalayas.
- It occupies the higher reaches of the Himalayas in remote, mountainous areas of Pakistan and India, in small and isolated populations, and is extremely rare in many of its ranges.
- The elevation gradient in which the brown bear is distributed is most vulnerable to global warming as this elevation belt is getting warmer faster than other elevation zones of Himalayas.
- It is **Endangered** in the Himalayas and **Critically Endangered in Hindu Kush**.
- International trade is prohibited by the Wildlife Protection Act in India.

Dashboard for Monitoring Air Quality

Context

- A new dashboard launched to provide a comprehensive picture of India's National Ambient Air Quality Standards (NAAQS), which come under the National Air Quality Monitoring Programme (NAMP).

- The dashboard is set up by climate and energy news site CarbonCopy in association with Mumbai-based start-up Respirer Living Sciences to presents a comparative picture of particulate matter (PM) for all 122 cities since 2016.
- It establishes a three-year rolling average trend for PM2.5 and PM10 levels across the cities from 2016 to 2018.

National Clean Air Programme

- The Centre had launched the National Clean Air Programme on January 10, 2019 to address air pollution in 122 cities.
- These cities are referred to as non-attainment cities as they did not meet the national ambient air quality standards for the period of 2011-15 under the National Air Quality Monitoring Programme.

Key highlights presented are

- Noida ranked the worst with 119, followed by Agra, Delhi, Lucknow, Ghaziabad, Muzzaffarpur, Kanpur, Chandigarh, Howrah and Kolkata.
- Delhi ranked as the most polluted state on an average of 3 years' PM10 monitoring data, followed by Jharkhand and Uttar Pradesh.
- Of the 23 states listed in the NCAP with non-attainment cities, only three states or Union Territories—Chandigarh, Himachal Pradesh and Punjab—accounted for above average readings for all three years of PM10 monitoring

Significance of this move

- It will help to analyze the effects of air pollutants on human health.
- This database will help to establish the relationship between air pollution and public health and determine the burden of respiratory diseases in the country by geographical distribution.
- It will help in planning and monitoring existing regulations for effective crisis management.

Two New Ramsar Sites

Context

- Asan Conservation Reserve has become Uttarakhand's first Ramsar site, making it a 'Wetland of International Importance'.
- The Reserve is located on the banks of Yamuna river near Dehradun district in Garhwal region of the Himalayan state.
- With this, the number of Ramsar sites in India goes up to 38, the highest in South Asia.

Asan Conservation Reserve

- It is home to many rare and endangered species like the Ruddy Shelduck, Red Crested Pochard, among others.
- Many endangered birds are found here and some even migrate to the Reserve, making it an ecologically important site.

Ramsar Convention

- Ramsar Convention on Wetlands is an intergovernmental treaty adopted on February 2, 1971 in the Iranian city of Ramsar, on the southern shore of the Caspian Sea.
- The name of the Convention is usually written "Convention on Wetlands''.
- The Convention on Wetlands came into force for India on February 1, 1982.
- Those wetlands which are of international importance are declared as Ramsar sites.

Ramsar sites in India

Sl. No.	Name of Site	State Location	Sl. No.	Name of Site	State Location
1	Asthamudi Wetland	Kerala	16	Nalsarovar Bird Sanctuary	Gujarat
2	Beas Conservation Reserve	Punjab	17	Nandur Madhameshwar	Maharashtra
3	Bhitarkanika Mangroves	Orissa	18	Nangal Wildlife Sanctuary	Punjab
4	Bhoj Wetlands	Madhya Pradesh	19	Nawabganj Bird Sanctuary	Uttar Pradesh
5	Chandertal Wetland	Himachal Pradesh	20	Parvati Agra Bird Sanctuary	Uttar Pradesh
6	Chilka Lake	Orissa	21	Point Calimere Wildlife and Bird Sanctuary	Tamil Nadu
7	Deepor Beel	Assam	22	Pong Dam Lake	Himachal Pradesh
8	East Kolkata Wetlands	West Bengal	23	Renuka Wetland	Himachal Pradesh
9	Harike Lake	Punjab	24	Ropar Lake	Punjab
10	Hokera Wetland	Jammu &Kashmir	25	Rudrasagar Lake	Tripura
11	Kanjli Lake	Punjab	26	Saman Bird Sanctuary	Uttar Pradesh
12	Keoladeo Ghana NP	Rajasthan	27	Samaspur Bird Sanctuary	Uttar Pradesh
13	Keshopur-Miani Community Reserve	Punjab	28	Sambhar Lake	Rajasthan
14	Kolleru Lake	Andhra Pradesh	29	Sandi Bird Sanctuary	Uttar Pradesh
15	Loktak Lake	Manipur	30	Sarsai Nawar Jheel	Uttar Pradesh

31	Sasthamkotta Lake	Kerala	35	Upper Ganga River (Brijghat to Narora Stretch)	Uttar Pradesh
32	Sunderbans Wetland	West Bengal	36	Vembanad Kol Wetland	Kerala
33	Surinsar-Mansar Lakes	Jammu &Kashmir	37	Wular Lake	Jammu & Kashmir
34	Tsomoriri Lake	Jammu &Kashmir			

Skinks of India

Context

- The publication, Skinks of India, was released by the Union Minister of State, Ministry of Environment Forest and Climate Change.

Skinks of India publication

- A recent publication by the Zoological Survey of India (ZSI) reveals that India is home to 62 species of skinks and says about **57% of all the skinks found in India (33 species) are endemic.**
- It is the first monograph on this group of lizards, which are found in all kinds of habitats in the country, from the Himalayas to the coasts and from dense forests to the deserts.

What are Skinks?

- These are harmless, insectivorous lizards are found across the country in every bio-geographic zone.
- With long bodies, relatively small or no legs, no pronounced neck and glossy scales, skinks are common reptiles around homes, garages, and open spaces such as sparks and school playgrounds, and around lakes.
- Although they are common reptiles and **have a prominent role in maintaining ecosystems**, not much is known about their breeding habits, and ecology because identification of the species can be confusing.
- Skinks are highly alert, agile and fast moving and actively forage for a variety of insects and small invertebrates.
- The reduced limbs of certain skink species or the complete lack of them make their slithering movements resemble those of snakes, leading people to have **incorrect notion that they are venomous.**

Parasitic Infections in One-Horned Rhinoceros

Context

- In conservation efforts for the greater one-horned rhinoceros population in India, the latest strategy is an examination of rhino dung to understand health issues of the animal.
- Since 2017, the Rhino Task Force of Assam and World Wildlife Fund India (WWF India) have been undertaking steps to study pathogens found in fresh rhino dung samples in Assam, Uttar Pradesh, and West Bengal.
- WWF India has published report, 'Prevalence of Endoparasitic Infections in Free-Ranging Greater One-Horned Rhinoceros' — for Assam and West Bengal.
- Main objective of this initiative is to start a systematic disease investigation process for the rhino.

Why is such a project important?

- While poaching is believed to be the main cause of death in rhinos, rhinos also die of natural causes, which have not been studied in great detail.
- There may be multiple reasons for a natural death but it is rarely investigated thoroughly.
- Habitat degradation can lead to an increased exposure to pathogens. Diseases linked to habitat degradation are invisible causes of rhino death
- Due to increasing livestock pressure on protected areas, there is a possible threat of pathogens getting transferred from domestic animals to wild animals.

What are the findings?

- The study concluded that parasites from four genera were present in an estimated 68% of India's rhino population.
- The overall prevalence of endoparasites was 58.57% in Assam and 88.46% in West Bengal.
- Rhino population in West Bengal has a higher prevalence rate of infection, but the occurrence of different parasites were higher in Assam.

Great Indian rhinoceros

- The Indian rhinoceros also called greater one-horned rhinoceros or great Indian rhinoceros is a rhinoceros species native to the Indian subcontinent.

- It is the **only large mammal species in Asia to be down-listed from endangered to vulnerable** in the International Union for Conservation of Nature, IUCN Red list in 2008.
- The extent and quality of the rhino's most important habitat are considered to be in decline due to hunting, agricultural development in tarai region and livestock encroachment.
- Indian rhinos once ranged throughout the entire stretch of the Indo-Gangetic Plain has reduced drastically to 11 sites in northern India and southern Nepal.

Daring Cities 2020 Conference

Context

- Daring Cities 2020' conference held.
- The conference is being hosted by the ICLEI and the City of Bonn, Germany, with the support of the German government.
- It discuss multilevel action to tackle the climate emergency and environmental sustainability

> **'Daring Cities'**
> - It is a **global forum on climate change for urban leaders** tackling climate emergency, especially in the context of the COVID-19 pandemic.
> - Daring Cities is a virtual, action-oriented forum to **recognize and empower courageous urban leaders** – including mayors and other decision-makers, technical staff, researchers, private sector representatives, and community organizers – to disrupt business-as-usual and shift towards business-as-possible.
> - Daring Cities showcases and catalyzes exemplary local climate action to tackle the climate emergency, including ambitious resilience-building and climate mitigation efforts.

Ratification of 7 Persistent Organic Pollutants

Context

- Union Cabinet approves ratification of seven chemicals listed under Stockholm Convention on Persistent Organic Pollutants (POPs).

More about news

- To streamlining the ratification procedure, Cabinet delegated its powers to ratify chemicals under the Stockholm Convention to Union Ministers of External Affairs and Environment, Forest and Climate Change with regard to POPs.
- Under the provisions of Environment (Protection) Act, 1986 manufacture, trade, use, import and export of seven chemicals namely

(i) Chlordecone,

(ii) Hexabromobiphenyl,

(iii) Hexabromodiphenyl ether and Heptabromodiphenylether (Commercial octa-BDE), (iv) Tetrabromodiphenyl ether and Pentabromodiphenyl ether (Commercial penta-BDE), (v) Pentachlorobenzene,

(vi) Hexabromocyclododecane, and

(vii) Hexachlorobutadiene,

Is prohibited, which were already listed as POPs under Stockholm Convention.

> **Stockholm Convention**
> - The Stockholm Convention is a **global treaty to protect human health and environment from POPs.**
> - **PoP's** are identified chemical substances that persist in the environment, bio-accumulate in living organisms, adversely affect human health and have the property of long-range environmental transport.
> - Exposure to POPs can lead to cancer, damage to central and peripheral nervous systems, diseases of immunesystem, reproductive disorders and interference with normal infant and child development.

Lepidoptera Species and Climate Change

Context

- Climate change driving butterflies, moths higher up Himalayas: study
- The findings of the study will be used as a baseline indicator to track the impact of climate change on animal species over the coming decade

What isLepidoptera Species?

- Lepidoptera is an order of insects that includes butterflies and moths.

Key findings of study

- Rising average temperatures in the Himalayan region have driven several dozen species of butterfly and moth to habitats higher up the mountains.
- The findings of the study will be used as a baseline indicator to track the impact of climate change on animal species over the coming decade
- The Himalayas are home to more than 35 per cent of Lepidoptera.

- The extension of the range of Lepidoptera due to climate change has been observed all over the world
- The data and evidence-based study (in India) confirms this trend, and shows us which species are moving, and how.

What lead to this shift?

- Receding ice caps and glaciers leading to a scarcity of water in the Himalayas has been a major reason for the altitudinal shift of the Lepidoptera.
- The increase in average temperature has also resulted in an altitudinal shift in vegetation – trees, shrubs, and plants that once grew at lower altitudes in the Himalayas are now found only higher up in the mountains.
- Increasing human habitation too, has contributed to the shift

Butterflies

- Butterflies are sensitive species that are extremely susceptible to changes in climate.
- They are good indicators of long-term change in climatic conditions.
- Butterflies like the Red Apollo are highly prized by collectors and are often poached.

Conclusion

- There is need to devise some stringent mitigation measures to protect butterflies and moths from both human beings and the changing climate.

Aenigmachanna Gollum

Context

- 'Aenigmachanna gollum' belongs to an old family of fish, called dragon snakeheads, which retains its primitive characteristics after all these millennia.
- It looks like a dragon, swims like an eel, and has remained hidden for a hundred million years.
- These living fossils hold a prominent role for our understanding of the diversification of the group in question.
- Besides the Gollum, a sister species has also been discovered, called 'Aenigmachanna mahabali'.

A rare sighting

- The dragon snakeheads have evaded scientists till now because they live in subterranean aquifers and come to the surface only after heavy flooding from rain.
- The closest relative of the family Aenigmachannidae is the Channidae, of which at least 50 species can be found in the streams and lakes of Asia and tropical Africa.
- According to molecular analyses, the two families split from each other 34 million to 109 million years ago.
- This may indicate that Aenigmachanna is a **Gondwanan lineage**, which has survived break-up of the supercontinent, with India separating from Africa at around 120 million years ago.

Relic from another time

- The lack of evolution can be seen in the shortened swim bladder of the dragon snakeheads as well as fewer vertebrae with ribs.
- These indicate that the family is less specialised than regular snakeheads.
- The family also has eyes and a reddish brown pigmentation, which is unusual as most subterranean fish are pale and have no eyes.
- Aenigmachannidae also lack the suprabranchial organ that allows the former to breathe air and proliferate widely.
- Such taxa have previously been characterized with the term 'living fossil' starting with Darwin or have been referred to as 'basal taxa'.
- They exhibit a striking level of morphological stasis as evidenced by a surprisingly large number of primitive characters compared to their extant sister group, and often represent lineages with only few extant representatives and a restricted distribution.

Echinops Sahyadricus

Context

- The new species was discovered while the botanists were working on a project called "Assessing the endemic biodiversity of high elevational plateaus of northern western ghats".
- It is a genus of about 130 species of flowering plants and unique because of the size of its composite inflorescence

Echinops Sahyadricus (English Common Name — Sahyadri Globe Thistle)

- Echinops is a genus of about 130 species of flowering plants found in tropical and north Africa, the Mediterranean basin and West Asia, extending eastwards to China and Japan.
- The highest number of taxa (76) are concentrated in the Iranian plateau.
- Five species are found in India including two in Maharashtra.
- The new species is unique because of the size of its composite inflorescence which measures up to 9 cm in diameter that is relatively large compared to other Echinops species found around the world.
- The species is endemic to Western Maharashtra and found only on a few open hilltops in the northern western ghats.
- It is named after the Sahyadri mountains.
- The new species is close to other Indian species called Echinops echinatus AKA Indian Globe thistle and one European species called Echinops sphaerocephalus.

Japan to achieve Zero Carbon Emissions by 2050

Context

- Japan will achieve zero carbon emissions by 2050, outlining an ambitious agenda as the country struggles to balance economic and pandemic concerns.
- Japan intends to make a sustainable economy a pillar of his growth strategy and "put maximumeffort into achieving a green society.
- The European Union and Britain have already set similar targets for net-zero greenhouse gasemissions, and China recently announced it would become carbon-free by 2060.
- Japan previously targeted a 80% reduction by 2050.
- Japan need to shift away from fossil fuels to counter climate change as an opportunity ratherthan a burden.
- Japan's current energy plan, set in 2018, calls for 22-24% of its energy to come from renewables,20-22% from nuclear power and 56% from fossil fuels such as oil, coal and gas.
- Progress toward reducing reliance on fossil fuels has been hindered due to the prolongedclosures of most of Japan's nuclear plants after the meltdown of the Fukushima Dai-Ichi plantdue to the 2011 earthquake and tsunami in the northeastern Tohoku region.
- Japan is planning to reverse its basic energy plan for 2030 and 2050.
- The 2050 emissions-free target would require drastic changes and likely prompt calls for morenuclear plant restarts.
- About 40% of Japan's carbon emissions come from power companies, and they must use morerenewable sources of energy while stepping up development of technologies using hydrogen,ammonia and other carbon-free resources

GREEN initiative

Context

- NTPC, India's largest power producer entered into foreign currency loan agreement with Japanese Government's financial institution for JPY 50 billion (approx. Rs. 3,582 crore), under Japan Bank for International Co-operation (JBIC)'s GREEN or Global Action for Reconciling Economic growth and Environment preservation initiative.
- JBIC will provide 60% of the facility amount and the balance will be given by other commercial banks.
- The loan proceeds will be utilized by NTPC Ltd, the PSU under Ministry of Power, for funding its capex for Flue Gas Desulphurization (FGD) & Renewable Energy projects.
  - FGD, substantially reduces the SOx emission in the flue gases of thermal power plants and is a critical step towards environmental sustainability.

Global action for Reconciling Economic growth and Environmental preservation ("GREEN")

- JBIC conducts environmental operations called Global action for Reconciling Economic growth and Environmental preservation ("GREEN").
- Under the GREEN operations, JBIC provides enhanced support for environmental projects in developing countries in the form of loans, guarantees and equity financing, while mobilizing private-sector funds.
- GREEN projects include development of photovoltaic generation facilities using advanced environmental technologies and highly energy-efficient power plants, as well as installation of energy-saving equipment, which are intended to help protect the global environment.

SECURITY

Indo-Tibetan Border Police (ITBP)

Context

- Union Minister of State for Home Affairs, took part in the 59th Raising Day function of the Indo-Tibetan Border Police (ITBP).

About Indo-Tibetan Border Police (ITBP)

- It is India's primary border patrol organization with its border with Tibet.
- It is one of the seven Central Armed Police Forces of India, raised on 24 October 1962, under the CRPF Act, in the wake of the Sino-Indian War of 1962.
- Parliament of India enacted the "Indo-Tibetan Border Police Force Act, 1992" to "provide for the constitution and regulation" of the ITBP "for ensuring the security of the borders of India and for matters connected therewith"
- The ITBP is trained in the Civil Medical Camp, disaster management, and nuclear, biological and chemical disasters.
- ITBP personnel have been deployed abroad in UN peacekeeping missions in Bosnia and Herzegovina, Kosovo, Sierra Leone, Haiti, Western Sahara, Sudan, Afghanistan, and elsewhere.
- Two battalions of ITBP are deputed to National Disaster Response Force.

Roles

ITBP is a multi-dimensional force which primarily has 5 functions:

- Vigil on the northern borders, detection and prevention of border violations, and promotion of the sense of security among the local populace.
- Check illegal immigration and trans-border smuggling.
- Provide security to sensitive installations and threatened VIPs
- Restore and preserve order in any area in the event of a disturbance.
- To maintain peace.

Stand-off Anti-Tank (SANT) Missile

Context

- India has successfully test-fired Stand-off Anti-tank (SANT) missile from a roof-top launcher at the Integrated Test Range (ITR) off the coast of Odisha.
- Developed by the Defence Research and Development Organisation (DRDO) for the Indian Air Force (IAF), the surface-to-air missile boasts of both, Lock-on After Launch and Lock-on Before Launch capabilities.
- SANT missile is an upgraded version of the Helicopter Launched Nag (HeliNa) missile, equipped with an advanced node-mounted seeker.
- The missile has a range of 12 kilometers.

SLINEX-20

Context

- SLINEX-20, India and Sri Lanka begin eighth edition of bilateral maritime exercise.

Aim

- To enhance inter-operability, improve mutual understanding and exchange best practices and procedures for multi-faceted maritime operations between both navies.
- It will showcase capabilities of our indigenously constructed naval ships and aircraft.
- SLINEX series of exercise emphasises the deep engagement between India and Sri Lanka which has strengthened mutual cooperation in the maritime domain.
- It is in consonance with India's policy of 'Neighbourhood First' and PM's vision of 'Security and Growth for all in the Region (SAGAR)'.
- The exercise is being conducted in a non-contact 'at-sea-only' format in the backdrop of COVID-19 pandemic.

Exercise Suraksha Kavach

Context

- Exercise Suraksha Kavach is a Joint Anti Terrorist Exercise By Army and Police.

Aim of the exercise

- To harmonize the drills and procedures of both Army and Police for activating anti-terrorist Quick Reaction Teams (QRTs) to counter any terrorist actions in Pune.

Participation

- Quick Reaction Teams, Dog Squads and Bomb Disposal Teams of Army as well as Anti-Terrorism Squad (ATS) and Quick Reaction Team of Maharashtra Police.
- It involved room intervention drill, search of room for any unidentified items/explosives by Dog squads and their neutralization/ diffusion by Bomb Disposal Units.
- An equipment display was also organized, showcasing important equipment required for the conduct of this exercise.
- The exercise provided an opportunity for both Army and Police to cooperate, coordinate, co-opt and streamline their drills and procedures.

Exercise Bongosagar

Context

- The second edition of the bilateral naval exercise Bongosagar between India and Bangladesh was held in Northern Bay of Bengal.

Key highlights

- Ships from both navies participated in surface warfare drills, seamanship evolutions and helicopter operations.
- Indian Navy & Bangladesh Navy ships undertook manoeuvres, surface drills, helo operations and seamanship evolutions.
- **Aim:** Developing interoperability and joint operational skills through conduct of maritime exercises and operations.
- The first edition of the Exercise Bongosagar, was held in 2019.

CORPAT exercise

- Bongosagar was followed by the third edition of India Bangladesh Coordinated Patrol (CORPAT).
- During the CORPAT exercise, both navies will undertake joint patrolling along the International Maritime Boundary Line (IMBL).
- In addition to ships, Maritime Patrol Aircraft from both navies and integral helicopters would also be participating in the exercise.

Significance

- It reflects the priority Indian Navy accords to Bangladesh Navy as part of Prime Minister's vision of SAGAR (Security And Growth for All in the Region).

ICGS Kanaklata Barua

Context

- A Fast Patrol Vessel (FPV) named ICGS Kanaklata Barua was commissioned in the Indian Coast Guard in Kolkata.
- It is named after a teenage freedom fighter, who was shot dead in Assam during the Quit India Movement.

What is the ship?

- It is the fifth and last in a series of FPVs built by Garden Reach Shipbuilders and Engineers (GRSE) Ltd.
- The other four are ICGS Priyadarshini (named after Indira Gandhi), ICGS Annie Besant, ICGS Kamala Devi (after Kamala Devi Chattopadhyay) and ICGS Amrit Kaur.
- These FPVs are upgraded versions of the inshore patrol vessels with a modified form of the hull and can achieve a speed of 34 knots.
- The previous versions were named ICGS Rajashree, Rajtanag, Rajkiran, Rajkamal, Rajdoot, Rajveer etc; the modified versions are named after freedom fighters.
- These are suited for patrolling, maritime surveillance, anti-smuggling, anti-poaching operations and also for fishery protection, and rescue and search missions.
- These FPVs are medium-range surface vessels with a length of around 50 m, and a displacement of over 300 tonnes.
- The previous ICGS Kanaklata Barua was commissioned in 1997 and decommissioned in 2017.
- During its 20-year service, it participated in many search and rescue missions, seizure of foreign fishing vessels venturing into Indian waters and evacuation missions.
- The ship was dismantled in 2018 and sold as scrap.

Who was Kanaklata Barua, after whom it is named?

- One of the youngest martyrs of the Quit India Movement, Kanaklata Barua has iconic status in Assam.
- Barua, then 17, led the Mukti Bahini, a procession of freedom fighters to unfurl the Tricolour at Gohpur police station on September 20, 1942.
- When police did not let them move forward, an altercation led to firing, killing Barua at the head of the procession.

1. **Consider the following statements:**

1. India is the largest producer of coffee in the world.
2. India exports both Robusta and Arabica varieties of coffee.
3. India is the only country in the world where the entire coffee cultivation is grown under shade, hand-picked and sun dried.

Which of the given statement/s is/are correct?

a) 2 and 3 only   b) 3 only
c) 1, 2 and 3 only   d) 1 and 3 only

2. **Consider the following statements:**

1. Sonic boom is a continuous sound which is emitted by the aircraft all the while it is travelling at a supersonic speed.
2. A sonic boom is said to occur when an object travels through the air faster than the speed of sound and creates shock waves.

Which of the given statement/s is/are incorrect?

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

3. **Consider the following statements with respect to the distribution of temperature over the world oceans:**

1. The annual range of temperature is higher in the Southern hemisphere than the Northern hemisphere.
2. The annual oscillation of the Sun causes seasonal changes in the surface temperatures.

Which of the statements given above is/are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

4. **Which of the following come(s) under the judicial powers of the President of India?**

1. Appointment of the Chief Justice and the Judges of the Supreme Court and the High Courts.
2. Appointing a Commission to investigate into the conditions of SCs, STs and other backward classes.
3. Appointing the Attorney-General of India.

Which of the statements given above is/are correct?

a) 1 only   b) 2 and 3 only
c) 1 and 3 only   d) 1, 2 and 3

5. **Which of the following could be the reason/s for Current Account Deficit?**

1. Overvalued exchange rate
2. Increase in exports
3. Long periods of consumer-led economic growth High inflation

Choose the correct option:

a) 1, 3 & 4 only   b) 2, 3 & 4 only
c) 2 only   d) 1 & 4 only

6. **Consider the following statements with respect to the Environment Pollution Control Authority (EPCA):**

1. EPCA is a Supreme Court-mandated body tasked with taking various measures to tackle air pollution in all the metropolitan cities across India.
2. System of Air Quality and Weather Forecasting And Research (SAFAR) is a national initiative introduced by EPCA.
3. The body is constituted under the provisions of the Environment (Protection) Act, 1986.

Which of the given statement/s is/are correct?

a) 1 and 2 only   b) 3 only
c) 1, 2 and 3   d) None of the above

7. **Consider the following statements with respect to BrahMos:**

1. It is a supersonic cruise missile developed by the Defence Research and Development Organisation of India (DRDO) and Russia.
2. It is a two-stage missile with a solid propellant engine in the first stage and a liquid ramjet in the second.
3. It can be launched from land, air, and sea.

Which of the given statement/s is/are correct?

a) 1 only b) 1 and 3 only
c) 1, 2 and 3 d) 1 and 2 only

8. **Concerning Indian history, who among the following represents one of the past Buddhas or Manushi Buddha?**

1) Shakyamuni
2) Rishabhdeva
3) Maitreya
4) Dipankara

Which of the given statement/s is/are correct?

a) 1 only   b) 2 only
c) 3 only   d) 4 only

9. **Consider the following statements with regards to the Mauryan Empire:**

1) The concentration of power in the king characterised the Mauryan rule.
2) The Mauryans may have maintained a naval force.
3) Chandragupta Maurya established the Mauryan dynasty after defeating Mahapadma Nanda.

Which of the statements given above is/are correct?

a) 1 and 2 only   b) 1 and 3 only
c) 3 only   d) 1, 2 and 3

10. **Consider the following statements with respect to Beijing Declaration:**

1. It is an agenda for women's empowerment adopted by the UN.
2. The Beijing Declaration was adopted at the end of the 2nd World Conference on Women (WCW).
3. It set strategic objectives and actions for the achievement of gender equality in 12 critical areas of concern.

Which of the given statement/s is/are correct?

a) 1 and 3 only   b) 2 only

c) 2 and 3 only   d) 1, 2 & 3

11. Consider the following statements with respect to 'Bongosagar':

1. It is a trilateral Naval Exercise between India, Bangladesh and Myanmar.
2. Its first edition was held in 2019.

Which of the given statement/s is/are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

12. Consider the following statements with respect to National Company Law Appellate Tribunal (NCLAT):

1. It was constituted under the Companies Act, 1956.
2. The chairperson and judicial members of the Appellate Tribunal shall be appointed after consultation with the Chief Justice of India.
3. It is the Appellate Tribunal to hear and dispose of appeals against any direction issued or decision made or order passed by the Competition Commission of India.

Which of the given statement/s is/are correct?

a) 2 and 3 only   b) 1 and 2 only
c) 1 only   d) 1, 2 and 3

13. Which of the following statement/s is/are true about Shivaji?

1) Shivaji's administrative system was adopted from the pre-existing administrative system of Deccani states.
2) Shivaji preferred to empower his watandars to strengthen his position in the Deccan.
3) Cash salaries were preferably given by Shivaji to his soldiers as he tried to minimise giving revenue share.

Select the correct answer using the code given below:

a) 1 and 3 only   b) 2 and 3 only
c) 3 only   d) 1, 2 and 3

14. Consider the following statements with respect to Earthquake swarms:

1) It is a series of multiple low magnitude earthquakes.
2) They are the aftershocks of a high magnitude earthquake.
3) Rampur in Himachal Pradesh and Koyna in Maharashtra have experienced Earthquake swarms.

Which of the given statements is/are correct?

a) 1 and 2 only   b) 1 and 3 only
c) 1, 2 and 3   d) 1 only

15. Consider the following statements:

1) Sun's magnetic field reverses its polarity roughly every 11 years.
2) A plage is a bright region in the chromosphere of the Sun typically found in regions of the chromosphere near sunspots.
3) Solar filaments are large regions of very dense, cool gas, held in place by magnetic fields.

Which of the given statement/s is/are INCORRECT?

a) 1 only   b) 2 and 3 only
c) 3 only   d) none of the above

16. Consider the following statements about the Badami caves:

1) These caves are popularly known as Vishnu Cave.
2) Paintings in these caves depict palace scenes.

Which of the statements given above is/are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

17. Consider the following statements with respect to Nagorno-Karabakh:

1) It is a mountainous territory bordered by the Caspian Sea in the east.
2) It is internationally recognized as part of Armenia.
3) Lake Sevan is located within Nagorno – Karabakh.

Which of the given statement/s is/are INCORRECT?

a) 1 only   b) 1 and 2 only
c) 1, 2 and 3   d) None of the above

18. Consider the following statements with respect to Insolvency and Bankruptcy Board of India (IBBI):

1) Established under the Reserve Bank of India Act of 1934, it is the regulator for overseeing insolvency proceedings.
2) It oversees Insolvency Professional Agencies, Insolvency Professionals and Information Utilities in India.
3) The members of IBBI include representatives from the Ministries of Finance, Law and Corporate Affairs, and the Reserve Bank of India.

Which of the given statement/s is/are INCORRECT?

a) 1 only   b) 2 and 3 only
c) 1, 2 and 3   d) none of the above

19. Bru (or Reang) tribe is recognised as a Particularly Vulnerable Tribal Group (PVTG) in which of the following state/s?

1) Assam
2) Tripura
3) Mizoram
4) Arunachal Pradesh

Select the correct answer using the code given below:

a) 3 and 4 only   b) 1 and 2 only
c) 2 only   d) 1, 2 and 3 only

20. Consider the following statements with respect to Coalition for Epidemic Preparedness Innovations (CEPI):

1) It is a subsidiary of the World Health Organisation.
2) It takes donations to finance independent research projects to develop vaccines against emerging infectious diseases (EID).

3) CEPI was formally launched in 2017 at the World Economic Forum (WEF).

Which of the given statement/s is/are correct?

a) 1 and 2 only
b) 1 only
c) 2 only
d) 2 and 3 only

21. Consider the following statements with respect to Hepatitis C:

1) Hepatitis C virus belongs to the same family as Zika Virus.
2) It causes inflammation of the liver.
3) It is a positive-sense single-stranded RNA virus.

Which of the given statement/s is/are correct?

a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) 1, 2 and 3

22. Consider the following statements with respect to Supersonic Missile Assisted Release of Torpedo (SMART):

1) It is a missile-assisted release of a heavyweight anti-submarine torpedo system.
2) It is an addition to Anti-Submarine Warfare (ASW) capabilities of India.
3) It is an indigenously developed system by laboratories of Defence Research and Development Organisation (DRDO).

Which of the given statement/s is/are correct?

a) 1 only
b) 1 and 2 only
c) 2 and 3 only
d) 3 only

23. Consider the following statements with regard to the Gupta Empire:

1) Samudragupta was called Napoleon of India.
2) Fa-Hien visited India during the reign of Samudragupta.

Which of the statements given above is/are incorrect?

a) 1 only
b) 2 only
c) Both 1 & 2
d) neither 1 & 2

24. Consider the following statements regarding the Peshwas:

1) They encouraged science and technology and took active interest in trade and industry.
2) They radically transformed the revenue system of the Mughals.

Select the correct answer using the code given below:

a) 1 only
b) 2 only
c) Both 1 & 2
d) neither 1 & 2

25. Which of the following statement/s is/are correct with respect to the appointment of external members to the Monetary Policy Committee?

1) They are appointed for a term of three years.
2) They are not eligible for re-appointment.

Select the correct answer using the code given below:

a) 1 only
b) 2 only

c) Both 1 & 2
d) neither 1 & 2

26. Which of the following statement/s is/are incorrect with respect to the Production Linked Incentive (PLI) Scheme of the Ministry of Electronics and IT?

1) It is applicable only to domestic firms and global firms are barred from applying under the scheme.
2) The scheme shall extend an incentive of 40% to 60% on incremental sales (over the base year) of goods manufactured in India and covered under target segments, to eligible companies, for a period of 10 years subsequent to the base year as defined.

Select the correct answer using the code given below:

a) 1 only
b) 2 only
c) Both 1 & 2
d) neither 1 & 2

27. Which of the following statement/s is/are correct?

1) Article 262 of the Indian Constitution provides for the adjudication of inter-state water disputes.
2) Article 263 provides for the establishment of Inter-State Council to effect coordination between the states and between Centre and states.

Select the correct answer using the code given below:

a) 1 only
b) 2 only
c) Both 1 & 2
d) neither 1 & 2

28. Consider the following statements:

1) The term 'Other Backward Class (OBC)' is defined in the Constitution.
2) Article 338 allows the President of India to appoint a commission to investigate issues related to OBC.

Select the correct answer using the code given below:

a) 1 only
b) 2 only
c) Both 1 & 2
d) neither 1 & 2

29. Consider the following statements with respect to the Comptroller and Auditor-General (CAG) of India:

1) CAG audits expenditures from the Consolidated Fund of India, contingency funds and Public Accounts.
2) The salary, allowances and other terms of service of the Comptroller and Auditor General of India are determined by the President.

Select the correct answer using the code given below:

a) 1 only
b) 2 only
c) Both 1 & 2
d) neither 1 & 2

30. Consider the following statements with regard to the Question hour:

1) It has never been suspended in Indian history.
2) Unstarred questions require a written reply and no supplementary question can be asked further.

Which of the statements given above is/are correct?

a) 1 only
b) 2 only
c) Both 1 & 2
d) neither 1 & 2

31. Consider the following statements regarding CRISPR:

1) CRISPR-Cas9 was adapted from a naturally occurring genome editing system in bacteria.
2) CRISPR-Cas9 technology behaves like a cut-and-paste mechanism on DNA strands that contain genetic information.
3) A women-only team has been awarded the Nobel Chemistry Prize for the CRISPR-Cas9 technique.

Which of the given statement/s is/are correct?

a) 1 only   b) 1 and 2 only
c) 2 and 3 only   d) 1, 2 and 3

32. Which of the following are the parts of basic structure:

1) Supremacy of the constitution
2) Welfare state
3) Limited power of the parliament to amend the constitution
4) Judicial review

Which of the given statement/s is/are correct?

a) 1 and 2 only   b) 2 only
c) 2 and 3 only   d) 1, 2, 3 and 4

33. Consider the following statements:

1) Nobel Prizes in the fields of Chemistry, Economic Science, Peace, Physics, and Physiology or Medicine were established as per the will of the Swedish scientist Alfred Nobel in 1895.
2) By far, only one women-only team has been awarded the Nobel Chemistry Prize.

Which of the given statement/s is/are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

34. Consider the following statements with respect to the Comptroller and Auditor General (CAG) of India:

1) CAG audits all expenditures from the contingency fund of India and the public account of India as well as those of the states.
2) CAG audits the accounts related to expenditure from the consolidated fund of India, the consolidated fund of each state and UTs having a legislative assembly.
3) The Indian Constitution lays down the qualification criteria for the CAG.
4) Public Accounts Committee (PAC) examines the audit reports submitted by the CAG.

a) 1 and 2 only   b) 1, 2 and 4 only
c) 1, 3 and 4 only   d) 1, 2, 3 and 4

35. Consider the following statements:

1) Sixth Schedule provides for separate Regional Councils for each area constituted as an autonomous region.
2) Governor of the sixth schedule areas can unite two or more autonomous districts into one.

Select the correct answer using the code given below:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

36. Consider the Following statements with regard to Ethics committee:

1) While Rajya Sabha has a permanent ethics committee but Lok Sabha has an ad-hoc ethics committee.
2) It formulates a Code of Conduct for members.
3) Lok Sabha's committee acts only on complaints made either by any member of the public or any other member of the House.

Select the correct answer using the code given below:

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 Only   d) 1,2 and 3

37. Consider the following statements with respect to "Kalbeliya Dance":

1) It is a folk dance of the Maharastra.
2) It is performed by the Kalbeliya tribe.
3) It is part of the UNESCO Intangible Cultural Heritage of Humanity.

Which of the given statement/s is/are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) 3 only

38. Consider the following statements:

1) Indian constitution has mentioned provisions for ban on cow slaughter.
2) Free legal aid to the poor is a non-justiciable right under the Indian constitution.

Select the correct answer using the code given below:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

39. MOSAIC expedition recently in the news is related to:

1) Expedition around arctic circle
2) Expedition around antarctic circle
3) Navy's women mission to travel around the globe
4) None of these

Select the correct answer using the code given below:

a) 1 only   b) 2 only
c) 3 only   d) 4 only

40. Which of the following statement/s is/are correct with respect to Food and Agriculture system (FAO):

1) FAO and the World Health Organization created the Codex Alimentarius Commission.
2) It is an independent agency working under OECD.

Select the correct answer using the code given below:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

41. Which of the following statement/s is/are correct with respect to Nutri-Sensitive

Agricultural Resources and Innovations (NARI) programme:

1) It has been launched by NABARD.
2) It promotes family farming linking agriculture to nutrition, nutri-smart villages for enhancing nutritional security.

Select the correct answer using the code given below:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

42. Which of the following statement/s is/are correct with respect to STARS project recently in the news:

1) It provides dedicated funds to ISRO to seek for extraterrestrial life.
2) NASA will provide additional funding through grants.

Select the correct answer using the code given below:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

43. Consider the following statements:

1) The 42nd amendment act reduced the duration of approval of national emergency by both the houses from 2 month to 1 month.
2) After approval, the emergency continues for 6 month.

Select the correct answer using the code given below:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

44. Consider the following statements:

1) Legislative Power of the state government is not suspended during national emergency.
2) Parliament can make laws on any state subject during national emergency.

Select the correct answer using the code given below:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

45. Consider the following statements related to National Security Guard (NSG):

1) The National Security Guard is a Special Forces unit under the Ministry of Home affairs.
2) It was founded on 15 October 1984, following Operation Blue Star.

Select the correct Options:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

46. Consider the following statements with respect to Kala Sanskriti Vikas Yojana' (KSVY):

1) Under Repertory Grant, cultural programmes/festival/seminars etc. at National level for promotion of art & culture may be conducted online.
2) Under National Presence, training of artistes by their respective Gurus and performance of Cultural Activities may be conducted online.

Select the correct Options:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

47. Consider the following statements:

1) The Governor of India is not answerable to any court for the performance of his duties.
2) Members of Parliament are liable in the court for votes given by them in Parliament.

Select the correct answer using the code given below:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

48. Nagraj and Jarnail singh case often seen in the news is related to:

1) Reforms in anti defection law
2) Reforms in criminalization of politics
3) Reservation in Promotion
4) Right to Information act

Select the correct answer using the code given below:
a) 1 only   b) 2 only
c) 3 only   d) 4 only

49. Consider the following statements:

1) Constitutional amendment is not a law and can't be challenged in Supreme Court.
2) Social Customs can be challenged in court of law on being restrictive of Fundamental rights.

Select the correct answer using the code given below:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

50. Consider the following statements:

1) Punjab procures more paddy than it produces in last few years.
2) NAFED undertakes procurement of the Paddy.

Select the correct Options:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

51. Consider the following statements:

1) Fertiliser subsidy is directly paid to the consumers.
2) Market rates of Non urea fertilisers are determined through market mechanisms.

Select the correct Options:
a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

52. SVAMITVA scheme recently seen in the news is related to:

1) Providing Record of Rights to village household
2) Providing Nutritious food at Anganwadi
3) Enhancing digital education
4) None of These

Select the correct Options:
a) 1 only   b) 2 only
c) 3 only   d) 4 only

53. Consider the Following statements related to difference between Parole and Bail:

1) Parole is given to undertrial while bail is given to a convicted person.
2) Bail involves monetary amounts while Parole generally doesn't have any monetary amount.
3) Bail is a matter of right while Parole isn't a matter of right.

Select the correct Options:

a) 1 and 3 only   b) 2 and 3 only
c) 1 and 2 only   d) 1, 2 and 3

54. Consider the following statements:

1) The Supreme Court has unlimited power while doing complete justice.
2) Unanimous judgment on Ayodhya temple was passed under article 136.

Select the correct answer using the code given below:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

55. Consider the following statements:

1) India has more borrowers than depositors with Banks.
2) More money is lent to businesses than deposited with the Banks.

Select the correct Options:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

56. Consider the following statements related to Kaleshwaram Lift Irrigation Project:

1) It is the world's largest irrigation and drinking water system project.
2) It is built on the Krishna River.

Select the correct Options:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

57. Consider the following statements:

1) Minimum Support Price (MSP) for paddy and wheat has no legal backing.
2) fair and remunerative price' (FRP) has the legal backing.

Select the correct Options:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

58. Which of the following committees are related to electoral reforms in India.

1) Dinesh Goswami Committee-1990
2) N N Vohra Committee-1993
3) B N Sri Krishna Committee-2017
4) Indrajit Gupta Committee-1998

Select the correct answer using the code given below:

a) 1,2 and 4 only   b) 2, 3 and 4 only
c) 1,3 and 4 Only   d) 2 and 4 Only

59. Consider the following statements related to Press Council of India:

1) It is a statutory body.
2) It collects fees from newspapers for its funding of operations.
3) It develops code of conduct for the Journalist.

Which of the above statements is/are correct?

a) 1 and 3 only   b) 2 and 3 only
c) 1 and 2 only   d) 1,2 and 3

60. Consider the following statements related to Paid News:

1) It is a malpractice under People of Representation act-1951.
2) Election Commission has appointed a Media Certification & Monitoring Committee (MCMC) at District and State level for checking Paid News.

Which of the above statements is/are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

61. Consider the following statements related to Ayushman Shahkar Scheme:

1) It is aimed to assist cooperatives which run hospitals.
2) National Cooperative Development Corporation (NCDC) would implement the scheme.

Select the Correct Option:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

62. Turkey touches which of the water bodies:

1) Black Sea
2) Sea of Marmara
3) Strait of Bosporus
4) Tyrrhenian Sea

Select the Correct Option:

a) 1,3 and 4   b) 1,2 and 4
c) 1, 2 and 3   d) 1, 2, 3 & 4

63. Consider the following statements related to Coalition for Epidemic Preparedness Innovations

1) It has been launched by Milinda and Gates Foundation to bring public, private, philanthropic organisations, and civil society organisations, to finance independent research projects to develop vaccines .
2) It is focused on the World Health Organisation's (WHO) "blueprint priority diseases".

Select the Correct Option:

a) 1 only   b) 2 only
c) Both 1 & 2   d) neither 1 & 2

64. Consider the following statements related to Zonal Councils:

1) They are statutory body established under Zonal Council Act, 1961.

2) Currently, 5 zonal councils are operating in India.

Select the correct answer using the code given below:

a) 1 only   b) 2 only

c) Both 1 & 2   d) neither 1 & 2

65. Consider the Following statements:

1) In giving grant, state can discriminate against institutions established by Minorities.

2) The right to conserve the language includes the right to agitate for the protection of the language.

Select the correct answer using the code given below:

a) 1 only   b) 2 only

c) Both 1 & 2   d) neither 1 & 2

66. Consider the following statements related to Indian National Army:

1) It raised Indian national Flag in Moirang, Nagaland.

2) It formed a provincial government of India in exile which functioned from Singapore.

Select the Correct Option:

a) 1 only   b) 2 only

c) Both 1 & 2   d) neither 1 & 2

67. Consider the following statements related to Pradhan Mantri Krishi Sinchayee Yojana-Accelerated Irrigation Benefits Programme (PMKSY-AIBP):

1) It is being implemented by multiple ministries.

2) The programme will be supervised and monitored by an Inter-Ministerial National Steering Committee (NSC) which will be constituted under the Chairmanship of the Prime Minister.

Select the Correct Option:

a) 1 only   b) 2 only

c) Both 1 & 2   d) neither 1 & 2

68. Param Shivay, Param Shakti and Param Brahma often seen in the news is related to:

1) Indigenously built stealth missiles

2) Indigenously built Super Computers

3) Name of anti tank guided missiles

4) None

Select the Correct Option:

a) 1 only   b) 2 only

c) 3 only   d) 4 only

69. Consider the following statements:

1) The President can empower other courts than the Supreme Court and High court to issue writs.

2) Parliament can suspend the right to move to the Supreme Court during national emergency.

Select the correct answer using the code given below:

a) 1 only   b) 2 only

c) Both 1 & 2   d) neither 1 & 2

70. Against whom/when writ of the Habeas Corpus can be issued:

1) Private Individual

2) Lawful detention

3) Proceeding is for contempt of legislature

4) Public authorities

Select the correct answer using the code given below:

a) 1 and 4 only   b) 2, 3 and 4 only

c) 1, 2 and 4 Only   d) 3 and 4 Only

71. Consider the following statements with regards to the World Happiness Report

1) It is released by the UNDP

2) India stands at 144 of the 156 nations

3) India's rank is worse than Pakistan and Bangladesh

Which among the following statements is/are correct?

a) 1 only   b) 2 only

c) 2 and 3 only   d) all of the above

72. Consider the following statements with regards to the NAG missile

1) It is an Anti Tank Missile

2) It is developed indigenously by DRDO

3) It is not a part of the Integrated Guided Missile Development Program

Which among the following statements is/are correct?

a) 1 only   b) 1 and 2 only

c) 2 and 3 only   d) 1 and 3 only

73. Consider the Following Statements:

1) State government can curtail the fundamental rights of Police Forces.

2) Parliament by law can exclude court martial from the purview of writ jurisdiction of the Supreme Court.

Select the correct answer using the code given below:

a) 1 only   b) 2 only

c) Both 1 & 2   d) neither 1 & 2

74. Consider the statements related to Aarogya setu app:

1) It has been developed completely by NIC.

2) It has helped identify Bluetooth contacts of COVID-19 positive users, and in issuing alerts for helping people to stay safe.

Select the correct answer using the code given below:

a) 1 only   b) 2 only

c) Both 1 & 2   d) neither 1 & 2

75. National Program and Project Management Policy Framework (NPMPF) recently in the news has been launched by:

1) Ministry of Finance

2) Ministry of Statistics and Programme Implementation

3) Niti Aayog and Quality Council of India

4) None of the above

a) 1 only   b) 2 only

c) 3 only   d) 4 only

ANSWERS

1. a	16. c	31. d	46. d	61. c
2. d	17. c	32. d	47. a	62. c
3. b	18. a	33. b	48. c	63. b
4. a	19. c	34. b	49. b	64. b
5. a	20. d	35. c	50. a	65. b
6. b	21. d	36. b	51. b	66. b
7. c	22. c	37. b	52. a	67. c
8. d	23. a	38. c	53. b	68. b
9. a	24. d	39. a	54. a	69. b
10. d	25. b	40. a	55. d	70. a
11. b	26. c	41. b	56. a	71. c
12. a	27. c	42. d	57. c	72. b
13. a	28. d	43. b	58. a	73. b
14. b	29. a	44. c	59. d	74. b
15. d	30. b	45. c	60. b	75. c