INDIA DIGITAL ECOSYSTEM FOR AGRICULTURE

GLOBAL CORPORATE TAX AND INDIA

DELTA PLUS VARIANT

4 YEARS OF GST

GREAT BARRIER REEF

CONTENTS

GENERAL STUDIES – I

FLAG SATYAGRAHA		*GS-I MODERN HISTORY*

Context

- Recently, the Minister of State (IC) for Culture and Tourism organized the Flag Satyagraha in Jabalpur, Madhya Pradesh.
- The programme was organised as part of <u>Azadi Ka Amrit Mahotsav</u> being celebrated to commemorate 75 years of Country's Independence.

About

- Flag Satyagraha is a campaign of <u>peaceful civil disobedience</u> during the Indian independence movement that focused on exercising the right and freedom to hoist the nationalist flag and challenge the legitimacy of the British Rule in India.
- This involved defiance of laws prohibiting the hoisting of nationalist flags and restricting civil freedoms.
- Flag Satyagrahas were conducted <u>most notably in the city of Jabalpur and Nagpur in 1923</u> but also in many other parts of India.

1923 Flag Satyagraha

- The arrest of nationalist protestors demanding the right to hoist the flag caused an outcry across India <u>as Gandhi had recently been arrested.</u>
- Nationalist leaders such as **Sardar Vallabhbhai Patel, Jamnalal Bajaj, Chakravarthi Rajagopalachari, Dr. Rajendra Prasad and Vinoba Bhave** organised the revolt.
- Thousands of people from different regions including as far south as the Princely state of Travancore traveled to Nagpur and other parts of the Central Provinces (now in Maharashtra and Madhya Pradesh) to participate in civil disobedience.
- In the end, the British negotiated an agreement with Patel and other Congress leaders permitting the protestors to conduct their march unhindered and obtaining the release of all those arrested.

ATLANTIC CHARTER

GS-I GEOGRAPHY

Context
- Recently, a document titled the "New Atlantic Charter" was signed by U.S. President Joe Biden and U.K. Prime Minister Boris Johnson.

About
- The Atlantic Charter was a statement issued on 14 August 1941 that set out American and British goals for the world after the end of World War II.
- The joint statement, later dubbed as the Atlantic Charter, outlined the aims of the United States and the United Kingdom for the postwar world as follows:
- no territorial aggrandizement,
- no territorial changes made against the wishes of the people (self-determination),
- restoration of self-government to those deprived of it,
- reduction of trade restrictions,
- global co-operation to secure better economic and social conditions for all,
- freedom from fear and want,
- freedom of the seas, and
- abandonment of the use of force, and disarmament of aggressor nations.
- The charter's adherents signed the Declaration by United Nations on 1 January 1942, which was the **basis for the modern United Nations.**
- The charter inspired several other international agreements and events that followed the end of the war.
- The dismantling of the British Empire, the formation of NATO, and the General Agreement on Tariffs and Trade (GATT) all derived from the Atlantic Charter.

ANTARCTIC TREATY

GS-I GEOGRAPHY

Context
- Recently, the 1959 Antarctic Treaty celebrated its 60th anniversary.

The Antarctic Treaty
- The Antarctic Treaty was signed in Washington on 1 December 1959 by the twelve nations **(Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States and USSR).**
- The Treaty now has 52 signatories. India became a member of this treaty in 1983.
- **Headquarters:** Buenos Aires, Argentina.
- The Treaty, applies to the area south of 60° South latitude.

Its provisions are as follows:

1 - No military use

2 - Freedom of scientific investigation

3 - Free exchange of scientific plans and data

4 - Any territorial claims put on hold

5 - Nuclear free zone

6 - Applies to land but not seas

7 - All stations open to inspection by other nations

8 - National laws apply to citizens not to areas

9 - The treaty may be modified at any time, requires unanimous agreement of treaty nations

10 - All treaty nations to ensure no-one carries out acts against the treaty

The Antarctic Treaty Main Points

The Antarctic Treaty System

- The Antarctic Treaty System comprises the Treaty itself and a number of related agreements.
- The Treaty System includes the recommendations, measures, decisions and resolutions of matters relating to:
  - scientific cooperation;
  - protection of the Antarctic environment;
  - conservation of plants and animals;
  - preservation of historic sites;
  - designation and management of protected areas;
  - management of tourism;
  - information exchange;
  - collection of meteorological data;
  - hydrographic charting;
  - logistic cooperation; and
  - communications and safety.

Major International Agreements of the Treaty System

- The 1959 Antarctic Treaty.
- The 1972 Convention for the Conservation of Antarctic Seals.
- The 1980 Convention on the Conservation of Antarctic Marine Living Resources.
- The 1991 Protocol on Environmental Protection to the Antarctic Treaty
- The development of these agreements has allowed the implementation, with greater precision, of **legally binding**

provisions for the regulation of activities in Antarctica.

The Indian Antarctic Program is a program under the control of the **National Centre for Polar and Ocean Research**, **Ministry of Earth Sciences,** Government of India. It was initiated in <u>1981 with the first Indian expedition to Antarctica</u>. The program gained global acceptance with India's signing of the Antarctic Treaty and subsequent construction of the **DakshinGangotri Antarctic research base in 1983,**superseded by **the Maitri base from 1989**. The newest base commissioned in 2012 is Bharati. Under the program, atmospheric, biological, earth, chemical, and medical sciences are studied by India.

CORAL AND FISH SPECIES   *GS-I   GEOGRAPHY*

Context
- A new study led by the University of Helsinki predicts that future coral loss might cause a more than 40% reduction in reef fish diversity globally.

Correlation between Fish and Coral
- Fish and coral diversity vary widely, with many more species in the **Indo-Pacific "coral triangle"** than in the western Atlantic and eastern Pacific.
- Areas with diverse corals still tended to have more diverse fishes, suggesting that coral diversity begets fish diversity.
- **Reason:** Corals provide a unique food source for some species, as well a three-dimensional habitat that many species use for shelter.
- And the fish that depend on corals may be prey for fish that don't depend directly on corals.
- Thus the world's tropical reef fishes are likely to disappear if corals disappear.
- The Central Pacific is expected to lose more than 60% of its reef fish, compared with only 10% in the Western Atlantic.

Basics of Corals and Coral Reefs
- Coral reefs are **large underwater structures composed of the skeletons of colonial marine invertebrates called coral.**
- Each individual coral is referred to as a polyp. Coral polyps live on the calcium carbonate exoskeletons of their ancestors, adding their own exoskeleton to the existing coral structure.
- Most corals live in a symbiotic relationship with **algae called zooxanthellae.**
- Coral provide carbon dioxide, ammonium& protection to zooxanthellae.
- In exchange Zooxanthellae provide coral with nutrients through photosynthesis. Corals need these organic products of photosynthesis to grow, thrive, and build up the reef. It also provide pigmentation and color to coral.

Parts of a coral polyp   (White 1987)
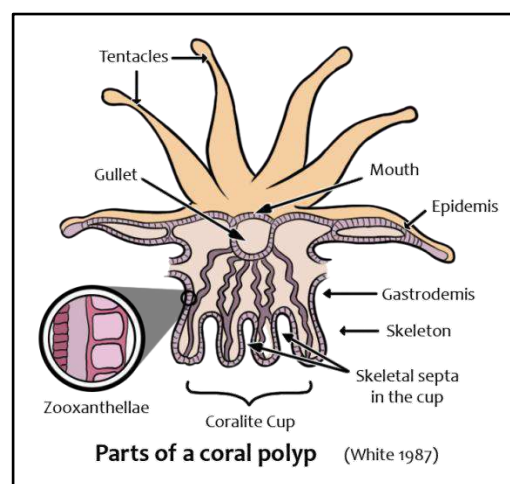
Types
- The coral species that build reefs are known as **hermatypic, or "hard," corals** because they extract calcium carbonate from seawater to create a hard, durable exoskeleton that protects their soft, sac-like bodies.
- Other species of corals that are not involved in reef building are known **as "soft" corals.**

Occurrence

- Corals are found all over the world's oceans, from the Aleutian Islands off the coast of Alaska to the warm tropical waters of the Caribbean Sea.
- The biggest coral reefs are found in the clear, **shallow waters of the tropics and subtropics**.
- The largest of these coral reef systems, the Great Barrier Reef in Australia, is more than 1,500 miles long (2,400 kilometers).
- Coral reefs cover **less than 1 percent of the ocean floor**.
- Most reefs are located **between the Tropics of Cancer and Capricorn**, in the Pacific Ocean, the Indian Ocean, the Caribbean Sea, the Red Sea, and the Persian Gulf.

Requirements for healthy coral reef growth (White 1987)
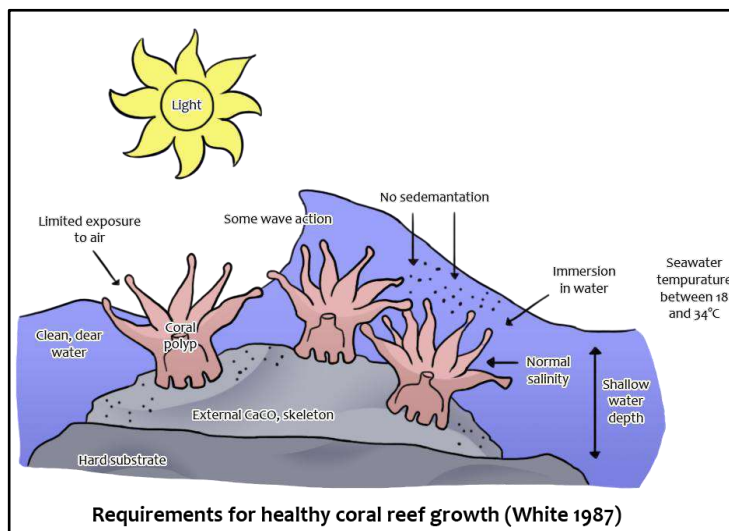
Types of Coral Reefs

- ❖ **Atoll Reef-** extends all around a lagoon without a central island.
  * when an island sinks below the ocean's surface.
- ❖ **Fringing Reef-** directly attached to shore.
  * grow up to the edge of the shore.
- ❖ **Barrier Reef-** separated from mainland by lagoon.
  * only grow when there is a change of sea level on the coast adjacent from it.
  * grow where land is sinking faster in the water.
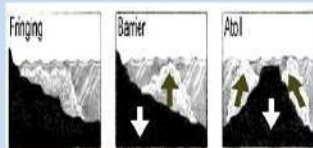
How Corals Become Bleached

Healthly Coral	Stressed Coral	Bleached Coral	Dead Coral
Coated with an algae-like substance known as zooxanthelae, corals depend on this to survive.	When coral becomes to stressed from changes in its environment, the zooxanthellae can become toxic and leave the coral.	Once the zooxanthellae has left, the coral turns white, leaving it vulnerable to starvation, disease, and death.	If the water conditions do not improve, the bleached coral will become black and unable to recover.

Coral Bleaching

- Coral bleaching occurs when coral polyps expel algae that live inside their tissues.
- Normally, coral polyps live in an endosymbiotic relationship with these algae, which are crucial for the health of the coral and the reef.

Causes of Coral Bleaching

- **Temperature:** There is rise in seawater temperature as a result of global warming. Changes in water heat affect zooxanthellae photosynthesis, forcing it out of coral polyps and depriving coral of essential resources.
- **Solar Irradiance:** During summer months, coral bleaching can occur due to solar radiation. Both photosynthetically active radiation and UV radiation have been associated with bleaching.
- **Subaerial Exposure:** Low tides, sea level drops and tectonic uplift can result in sudden exposure of coral to the atmosphere. Whether due to exposure to high/low temperature, increased solar radiation or desiccation, subaerial exposure often results in bleaching and consequent coral death due to sudden changes in atmospheric conditions.
- **Sedimentation:** Activities such as land clearing and coastal construction can result in high rates of erosion, increasing sediment content in water and disrupting the natural process of photosynthesis.
- **Fresh Water Dilution:** Following intense storms or heavy rainfall, increased freshwater precipitation can cause rapid dilution, increasing water salinity. Such events, can cause bleaching in small, nearshore areas.

- **Inorganic Nutrients:** Increases in inorganic nutrients such as ammonia and nitrate do not deplete coral of zooxanthellae, but rather cause it to multiply, increasing its content by 2-3 times.Though this does not directly cause bleaching, secondary adverse effects such as lower coral resistance and increased disease susceptibility can occur.
- **Xenobiotics:** Exposure of coral to chemical contaminants such as copper, herbicides and oils can cause zooxanthellae loss. Such loss is often highly localized, only occurring where xenobiotics (foreign substances) come into contact with coral.
- **Epizootics:** Epizootics are diseases that are temporarily prevalent, often becoming widespread through animal populations. Pathogen-induced bleaching commonly results in sporadic or whole-colony death amongst coral populations, leaving behind a white skeleton. (Not to be mistaken for bleaching.)

Impact

- As the coral reefs die, coastlines become more susceptible to damage and flooding from storms, hurricanes, and cyclones.
- Without the coral reefs the ocean will not be able to absorb as much carbon dioxide, leaving more CO2 in the atmosphere.
- The loss of the coral reefs would have a devastating impact on tropical countries' economies, food supplies, and the safety of their coastal communities.

Under threat: The world's reef-building corals
Conservation status of the world's reef-building corals in 2018

- 1% Critically endangered
- 3% Endangered
- 23% Vulnerable
- 20% Near threatened
- 34% Least concern
- 19% Data deficient
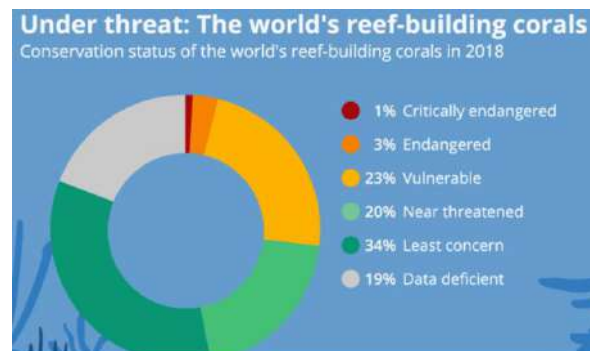
Steps to protect Coral

- Recycling and proper disposal of trash as Marine debris can be harmful to coral reefs.
- Follow the three R's (reduce, reuse, and recycle)
- Minimize use of fertilizers.
- Conserve water – the less water we use, the less runoff and wastewater will pollute our oceans.
- stop sewage pollution of our oceans,
- expand marine protected areas
- take steps to reverse global warming.

- Use reef-conscious sunscreens. (Most of them contain ingredients like Oxybenzone, octinoxate and avobenzone which are toxic to corals.)
- Reducing Carbon Footprint.
- Ban plastics and develop cost effective eco-friendly alternative
- Climate change mitigation and adaptation.
- Global, regional and national policy support.
- Placing coral reefs on the political agenda

Coral Triangle

- The Coral Triangle (CT) is a roughly triangular area in the tropical waters around **Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands and Timor-Leste.**
- This area contains at least 500 species of reef-building corals in each ecoregion.
- The Coral Triangle is located between the Pacific and Indian oceans.
- As one of eight major coral reef zones in the world, the Coral Triangle is recognized as a global centre of marine biodiversity and a global priority for conservation.
- Known as the "Amazon of the seas", it covers 5.7 million square kilometresof ocean waters.
- Its biological resources make ita global hotspot of marine biodiversity.
- It contains more than 76% of the world's shallow-water reef-building coral species, 37% of its reef fish speciesand the world's largest mangrove forest.
- The only coral reef area in the region to have been declared a **UNESCO World Heritage Site is in Tubbataha Reef Natural** Park in the Philippines.
- The **World Wide Fund for Nature** is addressing ecological threats to the region through its Coral Triangle Program, launched in 2007.

Context

- The Union Cabinet has approved the long pending Deep Ocean Mission.

About

- Deep Ocean mission is an initiative to undertake the deep ocean exploration focused on India's exclusive economic zones and continental shelf.
- It is under **Ministry of Earth Sciences (MoES).**

Objective

- It aims to search for deep-sea resources and minerals, flora and fauna, including microbes, and studying ways to sustainably utilise them.

Components

There are six components to the programme.

(1) Development of Technologies for Deep Sea Mining, and Manned Submersible:

- A manned submersible will be developed to carry three people to a depth of 6000 metres in the ocean with suite of scientific sensors and toolsfor mining Polymetallic Nodules.

(2) Development of Ocean Climate Change Advisory Services:

- It entails developing a suite of observations and models to understand and provide future projections of important climate variables on seasonal to decadal time scales.

(3) Technological innovations for exploration and conservation of deep-sea biodiversity

- Bio-prospecting of deep-sea flora and fauna including microbes and studies on sustainable utilization of deep-sea bio-resources will be the main focus.
- This component will support the Blue Economy priority area of Marine Fisheries and allied services.

(4) Deep Ocean Survey and Exploration

- To explore and identify potential sources of hydrothermal minerals that are sources of precious metals formed from the earth's crust along the Indian Ocean mid-oceanic ridges.

(5) Energy and freshwater from the Ocean

- Involves studying and preparing detailed engineering design for offshore Ocean Thermal Energy Conversion (OTEC) powered desalination plants.

(6) Advanced Marine Station for Ocean Biology

- Aimed at development of human capacity and enterprise in ocean biology and engineering.

Importance

- India's Exclusive Economic Zone spreads over 2.2 million square kilometers.
- India has been allotted a site of 75,000 square kilometres in the Central Indian Ocean Basin (CIOB) by the UN International Sea Bed Authority for exploitation of polymetallic nodules (PMN).
- These are rocks scattered on the seabed containing iron, manganese, nickel and cobalt.
- 380 million metric tonnes of polymetallic nodules are available at the bottom of the seas in the Central Indian Ocean.
- A fraction of that reserve can meet the energy requirement of India for the next 100 years.

DEEP OCEAN MISSION

- Deep Sea Mining through 'Underwater Vehicles' and 'Underwater Robotics'
- Asserting exclusive rights to explore polymetallic nodules from seabed **over 75,000 sq km of areas in international water**
- Estimated polymetallic nodules resource potential: **380 million tonnes (MT)**
- Development of ocean climate change advisory services
- Technology for sustainable utilisation of marine bio-resources

THESE POLYMETALLIC NODULES CONTAIN

Manganese	92.6 MT
Nickel	4.7
Copper	4.3
Cobalt	1

(*figures are rounded off)

- Deep ocean survey and exploration
- Energy from the ocean and offshore-based desalination
- Krill fishery from southern ocean

GENERAL STUDIES - II

Context

- Recently, Supreme Court has quashed the sedition charges against a senior journalist. Sedition charges are levied under section 124A of Indian Penal code.

About Section 124A

- It relates to the **offence of sedition or exciting "disaffection" against the government.**
- It was **first included in the Indian Penal Code in 1870 – 10** years after it was first enacted – ostensibly in response to the Wahabi movement in the 1860s.
- The provision **covers almost any form of expression: words, "either spoken or written", signs, as well as "visible representation".**
- It has at its **foundation the belief that people are obligated to feel "affection" towards the government or else** be punished.

Punishment for Sedition law

- It is non bailable offense.
- The punishment can go from three years of imprisonment to life term.
- Passport of the accused has to be surrendered.

M ZHAZO

SEDITION LAWS IN INDIA A RANGE OF LAWS ON   THE STATUTE BOOKS THAT DEAL WITH SEDITION

| ① INDIAN PENAL CODE (IPC), 1860 Section 124A, which includes terms like "hatred" and "contempt", along with "disaffection" | ② CRIMINAL PROCEDURE CODE (CRPC), 1973 Contains Section 95 which gives the govt the right to forfeit material punishable under Section 124A | ③ UNLAWFUL ACTIVITIES (PREVENTION) ACT (UAPA), 1967 For claims of secession, questioning territorial integrity and causing disaffection against India | ④ PREVENTION OF SEDITIOUS MEETINGS ACT, 1911 Criminalises meetings likely to promote sedition or disaffection. Continues to be on our statute books. |

Need of the sedition law

- It is needed **to effectively combat anti-national, secessionist and terrorist** elements.
- **'Government established by law' is the visible symbol** of the State. The very existence of the State will be in jeopardy if the Government established by law is subverted. Hence, there is need for sedition law.
- **Sedition law is needed to maintain the public** order. In a developing country, challenges arise from within and outside the environment, which threatens the democratic polity of country.
- **Indian geographical position has terrorist nations nearby.** Without having an effective law like sedition, it will be difficult to deal with their propaganda war.

Disadvantages

- Impedes on **multiple human rights such as freedom of expression, the freedoms of association and assembly,** and the right to a fair trial.
- **Elements of the offence are vague and over-broad,** are open to subjective interpretations.
- The **vagueness in its text has also allowed sedition to be misused against** political activists, human rights defenders and other individuals exercising or demanding their constitutional rights.
- It leaves **the door open to selective prosecution and interpretation,** based on discriminatory policies of government officials and the personal predilections of judges.

Court Verdict

- **Kedar Nath Singh Vs State of Bihar 1962:** Only those speeches, which incite direct **violence or threat to public order, can be tried under sedition law. Supreme Court upheld the constitutional validity of sedition law.**

- **Indra Das vs. State of Assam & Arup Bhuyan vs. State of Assam: Advocating revolution or overthrow of government is not sedition.** There should be imminent incite to violence for a speech to be sedition.
- **Maneka Gandhi case, 1978: Criticism against the govt policies which doesn't incite the people are within the purview of freedom of speech.**
- **Balwant Singh Case:** Mere sloganeering or threat to Indian sovereignty through public speeches does not entitle sedition unless there is clear call for imminent violence. Incitement rather than advocacy is the critical element for sedition law.

Way Forward

- **Needs to develop a liberal polity, which considers slogans by the youth not sedition. Focus should be** on the fulfilling the aspirations of the society than curbing the voice of youth using sedition law.
- **Amendments need to be brought to make sedition law more compartmentalised** than vague.
- **Prior approval of government** can be made necessary before filing a sedition complaint.
- The **law needs to be amended to ensure that unless there is an imminent** call for violence, no charges of sedition are registered.

ONE NATION ONE ELECTION

GS-II POLITY

Context

- **As the elections in four states and one Union territory in March-April are suspected to have contributed to the second wave of Covid infections,** a well-reasoned debate on a concept as important as "one nation, one election" is called for.

Definition of Simultaneous Election

- The term "Simultaneous Elections" **would broadly mean structuring the Indian election cycle in a manner that elections to LokSabha** and State Assemblies are synchronized together.
- In such a scenario, a voter would normally cast his/her vote for electing members of LokSabha and State Assembly on a single day and at the same time.

Historical Perspective

- Post adoption of the Constitution, **elections to LokSabha and all State Legislative Assemblies were held simultaneously over the period 1951** till 1967 when the cycle of synchronized elections got disrupted.

Constitutional Provisions related to simultaneous elections

- Article 83(2) of the Constitution **provides for a normal term of five years for the House of People (LokSabha). Article 172 (1) provides for similar** tenure for State Legislative Assembly from the date of its first sitting.

- **Tenure of the House cannot be extended beyond 5 years except in emergency situation.** Election Commission of India is empowered to notify elections to both LokSabha and State Legislative Assemblies six months prior to the end of the normal terms of the Houses.

Benefits of Simultaneous elections

- **Check on frequent Model code of Conduct:** It will mitigate the impact on development programs and governance due to imposition of Model Code of Conduct by the Election Commission. The imposition of Model Code of Conduct (MCC) puts on hold the entire development programme and activities of the Union and State Governments in the poll bound State. It even affects the normal governance. Frequent elections lead to imposition of MCC over prolonged periods of time. This often leads to policy paralysis and governance deficit.
- **Reduction in the expenditure :** Every year, the Government of India and/or respective State Governments bear expenditures on account of conduct, control and supervision of elections. Besides the Government, candidates contesting elections and political parties also incur huge expenditures.
- **Reduce the deployment of security forces for election purposes**: For providing the required security arrangements, the Election Commission generally involves Central Armed Police Forces (CAPF). It takes away a portion of such armed police force which could otherwise be better deployed for other internal security purposes.
- **Frequent elections disrupt normal public life:** frequent elections lead to disruption of normal public life and impact the functioning of essential services. Holding of political rallies disrupts road traffic and also leads to noise pollution.
- **Frequent elections perpetuate caste, religion and communal issues across the country**: If the country is perpetually on election mode, there is no respite from these evils. Holding simultaneous elections would certainly help in this context.
- **Frequent elections adversely impact the focus of governance and policy making**: the cycle of continuous elections was not only affecting the developmental process and good governance, but also forcing the political class to typically think in terms of immediate electoral gains rather than focus on long-term programmes and policies for the overall progress of the nation and its people.

Challenges Associated with Simultaneous elections
Operational feasibility / Do-ability

- How would terms of Assemblies/LokSabha be synchronized for the first time?
- Would it be feasible to extend or curtail the existing terms of some State Assemblies to facilitate the above?
- If elections are held simultaneously, what would happen in case the ruling party or coalition loses majority in between term, either in LokSabha or in State assemblies? Should the term of LokSabha and assemblies be fixed?
- Is it practically feasible for the ECI to conduct elections at such a massive scale – considering logistics, security and manpower resource requirements?
- **Impact to voter behavior:** Indian voters are not mature / informed enough to differentiate between the voting choices for State Assembly and LokSabha in case simultaneous elections are held. As a result, voter behavior gets influenced and he/she may vote for the same political party, which in most cases may be larger national parties.
- **Having to face electorate more than once every 5 year enhances the accountability** of politicians and keeps them on their toes.
- **Many jobs are created during elections**, boosting the economy at the grass-root levels.
- **Simultaneous elections would benefit larger national parties at** the cost of state/regional parties in case of a "national wave in favor of large national parties".

Way Forward

- In this context, **the Law Commission has suggested an alternative i.e. categorising states based on proximity to the next general election**, and having one round of State Assembly polls with the next LokSabha election, and another round for the remaining States 30 months later. But there is still no guarantee that mid-term polls would not be needed.

MODEL TENANCY ACT

Context
- Housing and Urban Affairs Minister addressed concerns about the Model Tenancy Act.

Need of the Act
- As per Census 2011, more than 1 crore houses were lying vacant in urban areas.
- The existing rent control laws are restricting the growth of rental housing and discourage owners from renting out their vacant houses due to fear of repossession.
- One of the potential measures to unlock the vacant house is to bring transparency and accountability in the existing system of renting of premises and to balance the interests of both the property owner and tenant in a judicious manner.
- **Encourage Renting: As per Census 2011, nearly 1.1 crore houses** were lying vacant in urban areas across the country. The act gives sufficient rights to landowners, which may encourage greater renting and reduce homelessness.
- Further, **the act will encourage the private sector to develop housing projects** for rent purposes.
- In India, **the rental yield for residential property is quite low, even in bigger cities. It is in the range of 1.5% to** 3% of the capital values due to obsolete laws.
- **Preventing Unnecessary Financial Burden**: The act places a cap of two months on the security deposit. This reduces financial strain on tenants and encourages more renting.
- Currently, the **security deposit in Mumbai and Bengaluru can reach 6-8 times** the monthly rent.
- Respecting the privacy of the Tenant: The landlords in India have a **habit of entering the rented property** as per their will. It violates the tenant's Right to Privacy under Article 21 of the Indian Constitution. But now a notice of 24 hours needs to be given before entering.

WHAT CHANGES
- Verbal rent agreements are illegal
- Security deposit capped at up to 2 month's rent for residential
- For non-residential premises, it is maximum 6 months
- Jurisdiction of civil courts barred
- Redressal within 60 days
- No eviction of tenant during tenancy period
- In force majeure, tenant allowed to stay for a month

Applicability of the Act
- After enforcement of this Act, **no person can let or take on rent any premises except by an agreement in writing.**
- The new Act **will be applicable prospectively and will not affect existing tenancies.** The Act seeks to cover urban as well as rural areas.

Innovative Mechanisms under Act
- States will set **up a grievance redressal mechanism consisting of Rent Authority, Rent Court and Rent Tribunal** to provide fast-track resolution of disputes.
- Disposal of a complaint/appeal by the Rent Court and the Rent Tribunal will be mandatory **within 60 days.**
- There is **no monetary ceiling.**
- **A digital platform will be set up in the local vernacular language** or the language of the State/Union Territory for submitting tenancy agreement and other documents. The Rent Authority will keep a tab on these agreements.
- **Verbal agreements will be out of the picture,** as the MTA mandates written agreement for all new tenancies which is to be submitted to the Rent Authority.
- **Tenants will continue to pay the rent even during the pendency** of a dispute with a landlord.
- Subletting of premises can only be done with the prior consent of the landlord, and no structural change can be done by the tenant without the written consent of the landlord.

Benefits from the Act

- It will create **an effective regulatory ecosystem in India to govern landlord-tenant relationships.**
- It will **provide a huge opportunity for private housing operators and institutional** investors in the organized rental housing market.
- It **will unlock vacant properties and increase** rental yields.
- It will reduce procedural barriers in registration by increasing transparency and discipline.
- It will help overhaul the legal framework with respect to rental housing across the country.
- It will enable creation of adequate rental housing stock for all the income groups thereby addressing the issue of homelessness.

Challenges with the Act

- Meaning of 'Premises': **States where the Rent Control Act is in place and where urban dwellings like slums/chawls were previously covered, may have to define it clearly** under their state level laws to provide protection to both tenants and landlords.
- There **is a time period required for on-ground implementation of the Model Tenancy Act,** 2021 by all states and UTs across the country.
- Prospective effect: The new model **act would have a prospective effect. This means it would be applicable to future disputes only**, hence past disputes would continue to linger on for years.
- **Inadequate Security Cover: Security Cap for two months may not be enough** to cover damages, especially during the last month when tenants adjust their rent in the security deposit.
- Like in **the case with RERA (Real Estate (Regulation and Development Act), the fear is that states may choose not to follow guidelines,** diluting the essence of the Model Act.

Way Forward

- States **should not dilute the provisions of the model tenancy act** but rather adopt it as per their particular needs.
- **Rent Authorities, Rent Tribunals and Rent Courts must be set up expeditiously** and strengthened with required financial resources to let them function effectively.
- **Specific cases of conflict between landlords and tenant may see retrospective application** of the law as it will foster the confidence of investors.

UNLAWFUL PREVENTION ACT, 1967   *GS-II GOVERNANCE*

Context

- Delhi **HC calls out misuse of UAPA**, raises bar for State to slap terror tag. It is the first instance of a court calling out alleged misuse of the UAPA against individuals in cases that do not necessarily fall in the category of "terrorism" cases.
- According to data provided by the Ministry of Home **Affairs in Parliament in March, a total of 1126 cases were registered under UAPA in 2019,** a sharp rise from 897 in 2015.
- Section 15 of the **UAPA defines "terrorist act" and is punishable with imprisonment for a term of at least five years to life.** In case the terrorist act results in death, the punishment is death or imprisonment for life.

Court Observations

- Unless the ingredients of the UAPA are clearly made out in the conduct of the accused, protest and dissent cannot be outlawed by labelling them as a terrorist act.
- UAPA can be applied only in exceptional circumstances. The draconian law cannot be invoked for crimes that do not fall under these exceptions, however egregious they might be.

About UAPA Act

- This law is aimed at prevention of unlawful activities associations in India.

- Its main objective was to make powers available for dealing with activities directed against the integrity and sovereignty of India. The Act provides special procedures to deal with terrorist activities, among other things.

Designation of Terrorist

- Under the Act, the central government may designate an organisation as a terrorist organisation if it:
  - (i)commits or participates in acts of terrorism,
  - (ii) prepares for terrorism,
  - (iii) promotes terrorism, or
  - (iv) is otherwise involved in terrorism.
- It empowers the government to designate individuals as terrorists on the same grounds.

Approval for seizure of property by NIA:

- Under the Act, **an investigating officer** is required to obtain the prior approval of the Director General of Police to seize properties that may be connected with terrorism.
- If the investigation is conducted by an officer of the National Investigation Agency (NIA), the approval of the Director General of NIA would be required for seizure of such property.

Investigation by NIA:

- Under the Act, investigation of cases may be conducted by officers of the rank of Deputy Superintendent or Assistant Commissioner of Police or above.
- It empowers the officers of the NIA, of the rank of Inspector or above, to investigate cases.

Insertion to schedule of treaties

- The Act defines terrorist acts to include acts committed within the scope of any of the treaties listed in a schedule to the Act.
- The Schedule lists nine treaties, including the Convention for the Suppression of Terrorist Bombings (1997), and the Convention against Taking of Hostages (1979) and International Convention for Suppression of Acts of Nuclear Terrorism (2005).

Challenges to the act

- It violates article 14 (Right to equality), article 19 (Right to freedom) and article 21 (Right to life).
- Tagging someone terrorist without even the trial is violation of right to reputation.
- Individual is not being given an opportunity to be heard which violates principle of natural justice.
- It is unreasonable, unjust, unfair, excessive, dis-proportionate and violated the due process.
- A person, who is designated a terrorist, even if he is de-notified subsequently, faces a lifelong stigma and this tarnishes his reputation for life.
- Designating a person as a terrorist on a mere belief of the government is arbitrary and excessive.
- It is unclear as to what legitimate aim does the state seek to achieve by declaring a person as a terrorist without even providing an efficacious remedy to challenge his notification.

Way Forward

- **Preventing Misuse: Terrorism is undoubtedly a big threat and must be tackled with stringent counter-terrorism laws**. But only if provisions of UAPA are followed in letter and spirit, without its callous usage to wrongfully implicate individuals.
- **Maintaining Balance between the Fundamental Freedoms and the Interest of the State:** Drawing the line between individual freedom and state obligation to provide security is a case of classical dilemma. It is up to **the officers to ensure professional integrity, follow the principle of objectivity and avoid any misuse.**
- **Judicial Review:** There is a greater role for the judiciary here to carefully examine the cases of alleged misuse. Arbitrariness and subjectivity under the law should be checked through **Judicial review**.

CAUVERY WATER MANAGEMENT AUTHORITY

Context
- The Cauvery Water Management Authority (CWMA)'s first meeting for the current water year will be held on June 22.

Cauvery Water Management Authority
- In 2018, the Centre constituted the Cauvery Water Management Authority (CWMA) to address the dispute over sharing of river water among Tamil Nadu, Karnataka, Kerala and Puducherry.
- Besides the members of riparian states, the board also has a nominee of the Centre.
- Cauvery Water Management Authority works under the Jal Shakti Ministry.

Constitutional Approach for Inter-state River water dispute
- Entry 17 of State List deals with water i.e. water supply, irrigation, canal, drainage, embankments, water storage and water power.
- Entry 56 of Union List empowers the Union Government for the regulation and development of inter-state rivers and river valleys to the extent declared by Parliament to be expedient in the public interest.

According to Article 262, in case of disputes relating to waters
- Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley.
- Parliament may, by law provide that neither the Supreme Court nor any other court shall exercise jurisdiction in respect of any such dispute or complaint as mentioned above.

Parliament has enacted two laws according to Article 262
- River Board Act, 1956: The objective of Boards is to advise on the inter-state basin to prepare development scheme and to prevent the emergence of conflicts. Till date, no river board as per above Act has been created.
- Inter-State Water Dispute Act, 1956:
- In case, if a particular state or states approach to Union Government for the constitution of the tribunal:
- Central Government should try to resolve the matter by consultation among the aggrieved states.
- In case, if it does not work, then it may constitute the tribunal.

No	Name of Tribunal	States concerned
	LIST OF EXISTING WATER DISPUTE TRIBUNALS	
1.	Godavari Water Disputes Tribunal	Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh & Odisha
2.	Krishna Water Disputes Tribunal -I	Maharashtra, Andhra Pradesh, Karnataka,
3.	Narmada Water Disputes Tribunal	Rajasthan, Madhya Pradesh, Gujarat and Maharashtra
4.	Ravi & Beas Water Tribunal	Punjab, Haryana and Rajasthan
5.	Cauvery Water Disputes Tribunal	Kerala, Karnataka, Tamil Nadu and Puducherry
6.	Krishna Water Disputes Tribunal -II	Karnataka, Telangana, Andhra Pradesh and Maharashtra
7.	Vansadhara Water Disputes Tribunal	Andhra Pradesh &Odisha
8.	Mahadayi Water Disputes Tribunal	Goa, Karnataka and Maharashtra

Need to amend 1956 act
- There are dozens of tribunals for inter state water dispute resolution. It makes the process unwieldy and delayed.
- There are time delays from 6 years to 20 years in awarding the verdict.
- Low acceptance of the awards by the state: Only three out of eight awards have been accepted.

- There are tribunals for last 30 years like Cauvery tribunal, Ravi tribunal and hasn't given any verdict.
- There has been delay in constituting the tribunals. It took nine years to constitute the Narmada tribunal.
- The River Boards Act 1956, which is supposed to facilitate inter-state collaboration over water resource development, remained a 'dead letter' since its enactment.
- There was no clarity in the tenure of tribunal members.
- Generally tribunals members were not specialist in areas.
- Tribunals didn't go forward in water management and focus on developing a water database.
- Tribunals were created when State approached the center and centre approved creation of tribunals.

Provisions of the Inter-State River Dispute (Amendment) Act: 2019

- A dispute between two states will first go to a dispute resolution committee. In case of its failure, dispute will go to the permanent tribunal.
- A single Tribunal with different benches for all the river disputes.
- Maximum duration for a tribunal award is 6 years. 1.5 years are for dispute resolution committee and 4.5 years are for tribunals hearing and verdict.
- Tribunals member tenure will be of 5 years or 70 years of age.
- Tribunal will consist domain experts.
- Tribunal decisions are binding and has authority of Supreme court order.
- It will require maintenance of basin database.

ONE NATION ONE RATION CARD

GS-II   GOVERNANCE

Context

- The Supreme Court set a deadline of July 31 for States to implement the 'One Nation One Ration Card' scheme **to allow migrant workers avail of subsidised food from any part of the country.**

About One nation One Card (ON-ORC)

- Under the 'One Nation, One Ration Card' system, **the beneficiary will be able to buy subsidised food grains** from any FPS across the country.
- It will **identify a beneficiary through biometric authentication** on electronic Point of Sale (ePoS) devices installed at the FPSs.
- **Integrated Management of Public Distribution System (IM-PDS) portal provides the technological platform** for the inter-state portability of ration cards.

Preparatory Steps

- **Seeding of Aadhar Card with Ration Card**
- **Installation of PoS machines at all Fair Price Shops across India.**
- Inter-State Portability of the ration card through Annavitran Portal

Standard Format of Ration Card

- For national portability, the state governments have been asked to issue the ration card in bi-lingual format having local language along with English or Hindi.
- **10-digit standard ration card number, wherein first two digits will be state code and the next two digits will be running ration card numbers.**
- A set of another two digits will be appended with ration card number to create unique member IDs for each member of the household in a ration card.

Benefits

- **Beneficial for migrant workers as they will be able to access the food grains from across the India.**

- **Target the prevailing hunger and urban poverty.**
- Universal access to food grains
- Empowerment of Consumers as they will have choice to choose the fair price shop. It will give voice and Choice to consumers leading to enhanced accountability.
- Provide stronger data on status of migration in India which will help in making data driven policies.

Challenges

- **Seeding with Aadhar card has witnessed exclusion error which** can get amplified at national level with little scope of grievance redressal.
- **Logistics issues as FPS receive the quota based on the beneficiary** enrolled at the shop.
- ON-ORC will affect how the financial burden is shared between states.
- **The larger issues of federalism and inter-state coordination**: Many states are not convinced about a "one size fits all" regime because they have customised the PDS through higher subsidies, higher entitlement limits, and supply of additional items.
- **Technological Challenges: ON-ORC requires a complex technology backbone that brings over 750 million beneficiaries**, 5, 33,000 ration shops and 54 million tonnes of food-grain annually on a single platform.

Way Forward
Learning from the GST

- **Centre could provide an assurance like guaranteed compensation (as seen in GST) to "net inbound migration" states** such as Maharashtra and Kerala that any additional costs on account of migrants will be covered by it for the five years.
- Government **could create a specific council like GST council** for inter-state coordination.
- **Technological challenges could be overcome by developing the platform like GSTN** for this scheme.
- The Nilekani-led task force **recommended setting up of a PDS network (PDSN) to track movement of rations, register beneficiaries**, issue ration cards, handle grievances and generate analytics.

TULU LANGUAGE FOR OFFICIAL LANGUAGE

GS-II   SOCIAL JUSTICE

Context
- Various organisations initiated a Twitter campaign demanding official language status to Tulu in Karnataka and Kerala and received an overwhelming response. More than 2.5 lakh people tweeted in support of the campaign.
- As the clamour **grows for Tulu to be included in the eighth schedule of the** Constitution and given official language status in Karnataka and Kerala.

About Tulu
- Tulu is a Dravidian language spoken mainly in two coastal districts Dakshina Kannada and Udupi of Karnataka and Kasaragod district of Kerala.
- As per the 2011 Census report, there are 18,46,427 Tulu-speaking people in India.
- Some scholars suggest Tulu is among the earliest Dravidian languages with a history of 2000 years.

Constitutional Provisions for languages
- **Article 29 of the Constitution provides that a section of citizens having** a distinct language, script or culture have the right to conserve the same.
- The **Constitution has 22 blue-eyed languages. They are protected in Schedule VIII** of the Constitution.
- Under the Constitution, **provision is made for the appointment of Special Officer for linguistic minority with the sole responsibilities o**f safeguarding the interest of language spoken by the minority groups.
- The **language policy of India provides a guarantee to protect the linguistic minorities**.

Need for new languages in 8th schedule
- Many languages **that are kept out of this favoured position are in some ways more deserving to be included in the Eig**hth Schedule. Sanskrit has only 24,821 speakers (2011 Census). Manipuri has only 17,61,079 speakers.
- **Many unscheduled languages have a sizeable number of speakers**: Bhili/Bhilodi has 1,04,13,637 speakers; Gondi has 29,84,453 speakers; Garo has 11,45,323.
- **Most of the languages and dialects are restricted to specific region**s and many of them are on the verge of extinction.
- **The language diversity is under threat** as speakers of diverse languages are becoming rare and major languages are adopted after abandoning the mother tongues.
- **Multilingualism is the way of life in India as people in different parts of the country** speak more than one language from their birth and learns additional languages during their lifetime.

Advantage of being in 8th schedule
- Gets recognition from the SahityaAkademi.
- Books are translated into other recognised Indian languages.
- Members of Parliament and MLAs could speak in language in Parliament and State Assemblies, respectively.
- Candidates could write all-India competitive examinations like the Civil Services exam.
- Placing of all the deserving languages on equal footing will promote social inclusion and national solidarity.
- It will reduce the inequalities within the country to a great extent.

Need for Protection of language
According to the Yuelu Proclamation of UNESCO:
- The protection and promotion of linguistic diversity helps to improve social inclusion and partnerships.
- Helps to reduce the gender and social inequality between different native speakers.
- Guarantee the rights for native speakers of endangered, minority, indigenous languages.

- Enhance the social inclusion level and social decision-making ability by encouraging them to participate in a series of actions to promote cultural diversity.
- 5% of the total in 2018.

SECULARISM

GS-II   SOCIAL JUSTICE

Context

- Integration of various stakeholders is the need of the hour to attain the Indian notion of secularism at ground level.

Background

- In India the Constitution declares that **every Indian citizen has a right to live with freedom** and dignity in any part of the country but more often this idea is victimized by political identity.
- Secularism is **first and foremost a doctrine that opposes all such forms** of inter-religious domination.
- A secular state must be committed to principles and goals which are at least partly derived from non-religious sources.
- To be **truly secular, a state must not only refuse to be theocratic but also have no formal**, legal alliance with any religion.
- A secular state must be committed to principles and goals which are at least partly derived from non-religious sources.
- Secularism **followed by India maintains equidistant interference between various religions**.

The western model of secularism

- American model**, separation of religion and state is understood as mutual exclusion**: the state will not intervene in the affairs of religion and, in the same manner, religion will not interfere in the affairs of the state.
- **Religion and state have separate spheres of its own** with independent jurisdiction.
- **Religious classification cannot be the basis of any public policy**.
- The **state cannot aid any religious institution** .Eg - State cannot give financial support to educational institutions run by religious communities
- **State cannot hinder the activities of religious communities**, as long as they are within the broad limits set by the law of the land.
- **Religion is a private matter**, not a matter of state policy or law.
- There is **little scope for community-based rights or** minority rights.

Indian model of secularism

- Indian secularism is **fundamentally different from Western** secularism
- **Equal protection by the State to all religions**
- **State protects all religions, but does not favour one at the expense of others** and does not itself adopt any religion as the state religion as Pakistan did after independence
- **Indian secularism does not focus only on church-state separation** (western notion of secularism) and the idea of inter-religious equality is crucial to the Indian conception.
- **Indian secularism deals not only with religious freedom of individuals but also with** religious freedom of minority communities.
- Since a **secular state must be concerned equally with intra-religious domination, Indian secularism has made** room for and is compatible with the idea of state-supported religious reform. Eg - Indian constitution curb on untouchability.
- **Indian state may engage with religion negatively** to oppose religious tyranny
- All **these complex strategies are adopted by the state to promote the values** of peace, freedom and equality.

Secularism and Constitution of India

- The state will not identify itself with or be controlled by any religion;
- While the **state guarantees to everyone the right to profess whatever religion one chooses to follow, it will not accord** any preferential treatment to any of them.
- **No discrimination will be shown by the state** against any person on account of his religion or faith.
- The **right of every citizen, subject to any general condition, to enter any** offices under the state and religious tolerance form the heart and soul of secularism as envisaged by the constitution.

TRANS ID PORTAL	GS-II SOCIAL JUSTICE

Context

- Just over six months after it was launched, the Centre's national portal for issuing certificates of identity to transgender persons has issued 1,557 certificates, according to Social Justice and Empowerment Ministry data.
- The Transgender Persons (Protection of Rights) Act, 2019 guarantees a transperson the right to self-perceived gender identity and a certificate of that identity from the government.

Background

- **Supreme Court Judgment (2014): In National Legal Services Authority versus the Union of India** case, SC recognised the rights of transgender persons to decide their own gender identity and to be treated as the 'third gender'
- Supreme Court **had also directed the Central and State Govts. to frame welfare schemes**, extend reservation to them and take measures to provide medical care to the transgender community.
- A **Private members' bill was brought by DMK leader Tiruchi Siva, in the RajyaSabha in 2015. It was passed in Rajya** Sabha but was pending in LokSabha and thus lapsed in 2019 with the formation of the new LokSabha.
- **Government bill was introduced in 2016, after being scrutinized** by parliamentary standing committee it is finally passed with 27 amendments.

Objectives of the Act

- To **uplift and empower transgender persons by mitigating** social stigma, social exclusion, abuse and crimes against them.
- To **bring this marginalised section into mainstream society** in order to build an inclusive society
- To make all stakeholders more responsive
- To **make enforcement agencies more accountable for their actions** especially when they are dealing with transgender persons.

Key provisions of the Act

- It **defines a transgender person as one whose gender does not match the gender** assigned at birth, which includes trans-men, trans-women, persons with intersex variations and gender-queers.
- It **prohibits discrimination against transgender persons in educational institutions**, government establishments, and while renting or purchasing property, receiving healthcare and using public services.
- **Right of residence is granted to every transgender person**. If immediate family is unable to provide care then on court orders a transgender person may be placed in a rehabilitation centre.
- A **transgender person may make an application to the District Magistrate for a certificate of identity.** In case person undergoes a sex reassignment surgery, then one must apply for another certificate to change their gender identity.
- **Causing harm of any kind, including physical or sexual abuse, to a transgender person,** could attract punishment from six months and extend up to two years.
- **National Council for Transgender Persons will be formed to advise the government** on formulating policies for the community, monitor its implementation and will address grievances.

- **Centre will provide healthcare services, including sex reassignment surgery** and hormonal therapy.
- **Educational institutions funded or recognised by the relevant government** shall provide inclusive education, sports and recreational facilities for transgender persons

Pros of the Act

- It will **provide a dignified life to the community members**, which is guaranteed under Article 21 of Constitution.
- It **will help in reducing social discrimination, social exclusion** and atrocities against transgender and will lead to their holistic development
- **Transgender persons will be able to avail the benefits of government** welfare schemes.
- It is a **progressive step as it allows self-perception of gender identity** among transgender.
- **National Council for Transgender Persons, which have representation from transgender person**, this move will allow incorporating more genuine demands
- **Provisions of healthcare facility will help to reduce the HIV AIDS** prevalence among transgender and overall burden of the disease.

Cons of the Act

- It fails to define **what constitutes discrimination in the context of the transgender** community and punishment for those who discriminate.
- It rejected **Standing Committee recommendation of setting up a screening** committee. With this there are no avenues open to appeal in case, a magistrate refuses to hand out a certificate.
- It **does not make any mention of reservation in education and employment** for the transgender community.
- The **process of applying for a "Certificate of identity" is contrary to SC judgment**, which identifies privacy, self-identity and personal integrity as fundamental rights of transgender persons.
- It **did not provide extensive penalties for crimes such as rape committed** against transgender persons and for other crimes or violence light punishment is given.
- **Bullying in schools and at the workplace is frequent but there is no discussion** about this issue in the bill
- **Medical community lacks capacity and knowledge** of transgender bodies.
- **Due to high illiteracy among transgender, they are more prone to face** bureaucratic discrimination or delay in getting identity certificates or welfare schemes benefits.
- It **recognised biological family and is silent on adopted** family
- Their **right to residence, the prohibition of discrimination, inclusive education**, livelihood, protection at the workplace, and healthcare are discussed but how it will happen is missing.
- The Act says that there will be just one committee at the national level including maximum five representatives from the transgender community. This is unfair representation for the transgender population.
- The definition of Transgender community includes intersex has been objected by Activists.

Way forward

- There is **need to spread awareness** about this law among transgender and NGO's and civil society can play an active role in this direction
- **There is need to educate and sensitise society about the violence and discrimination transgender people face, as these people seek equality not just** rehabilitation.
- Government **should conduct a survey to get accurate data about** the socio-economic conditions of trans-people, as it will help government to make effective policies for them.
- There is **an urgent need to enhance law enforcement response** and training
- Other states **should also adopt Kerala's progressive model under which seats** are reserved in higher education institutions for trans-people and Tamil Nadu model of setting up transgender welfare board.
- **New infrastructure like separate hostels, bathrooms are required** across all educational and workplaces.

Conclusion

- Law alone is unable to empower the persecuted transgender community or to do away the social prejudice and trans-phobia, as it is an issue of inclusiveness, thus it needs to be addressed at various levels of society.

ASPIRATIONAL DISTRICTS PROGRAMME   *GS-II   SOCIAL JUSTICE*

Context

- UNDP Report lauded the Aspirational Districts Programme.

Details

- In the report, **the United Nations Development Programme (UNDP) has lauded India's Aspirational Districts Programme (ADP) and said that** it should serve as a best practice for several other countries where regional disparities in development status persist for many reasons.
- The report said that due to concerted efforts made under the ADP, previously neglected districts, including those in remote locations and those affected by Left Wing Extremism, 'have experienced more growth and development in the last three years than ever before'.
- The Aspirational Districts Programme (ADP) is one of the largest experiments on outcomes-focused governance in the world.

About Aspirational Districts Programme

- The ADP is NitiAayog's flagship initiative to improve health, nutrition, education, and economic outcomes.
- It is spread across 112 of India has socio-economically challenged districts.
- NitiAayog plays a mentoring role in 27 districts in eight states, home to about 60 million people.

Framework behind ADP

- The ADP's theory of change rests on three pillars: Competition, Convergence, and Collaboration.
- Competition fosters accountability on district governments for outcomes (instead of inputs) using high-quality data.
- **Convergence creatively brings together the** horizontal and vertical tiers of the government.
- **Collaboration enables impactful partnerships between government, philanthropy and civil society**.
- **Pioneering state and district-level initiatives in both the ADP and non-ADP districts in areas prioritised** under the programme.
- Spurred by **competition on outcomes, local governments target their efforts and improve programme implementation** and design.
- The focus on outcomes enables local experimentation based on a firm appreciation of ground **realities.**
- **Partnerships be**tween various philanthropic and civil society organisations with district governments augment local capacity.
- The **programme has shifted focus away from inputs and budgets to outcomes, such as learning and malnutrition**, at the highest echelons of the government.
- It has **also introduced non-financial incentives to encourage government officials to deliver results**.
- The **programme has also developed a lean data infrastructure that smartly exploits complementary strengths** of administrative and survey data.

Result of ADP

- **Health outcomes in the monitored districts reveal significant** improvements between the first, second and third-party household surveys (in June-August 2018 and January-March 2019).
- Increase in registering pregnant women into the health system (from 73 per cent to 86 per cent)
- **Institutional delivery of babies (66 per cent to 74 per cent)**.
- Anti-diarrheal treatment via ORS (51 per cent to 67 per cent) and zinc (34 per cent to 53 per cent).

Reasons behind the Changes

- **Pioneering state and district-level initiatives in both the ADP and non-ADP districts** in areas prioritised under the programme.
- **Spurred by competition on outcomes, local government target their** efforts and improve programme implementation and design.
- The focus on outcomes enables local experimentation based on a firm appreciation of ground realities.
- **Partnerships between various philanthropic and civil society organisations** with district governments augment local capacity.
- The **programme has shifted focus away from inputs and budgets to outcomes, such** as learning and malnutrition at the highest echelons of the government.
- It **has also introduced non-financial incentives to encourage government officials** to deliver results.
- The programme has also developed a lean data infrastructure that smartly exploits complementary strengths of administrative and survey data.

Scope for Improvement

- A **simplified ranking index — with few but carefully chosen output and outcome** measures — that can more clearly signal national development targets, while providing autonomy to local governments.
- **Building each district's internal capacity to produce reliable and actionable data and promoting** a culture of data based policy making a priority for the ADP.

HOW ASPIRATIONAL DISTRICTS ARE IMPROVING

Top 10 districts which have shown most improvement

- ⑦ Kupwara (J&K)
- ③ Siddharthnagar (UP)
- ⑧ Namsai (Arunachal)
- ④ Aurangabad (Bihar)
- ⑨ Jamui (Bihar)
- ⑥ Gumla (Jharkhand)
- ⑩ Ranchi (Jharkhand)
- ⑤ Koraput (Odisha)
- ① Virudhunagar (Tamil Nadu)
- ② Naupada (Odisha)
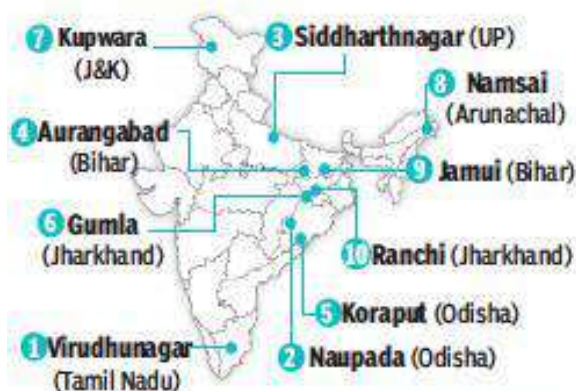
Fast-moving districts
(Districts that have sharply improved their ranking from a survey conducted in June)

District	Oct rank	June rank
Kupwara (J&K)	7	108
Ranchi (Jharkhand)	10	106
Siddharthnagar (UP)	3	101
Jamui (Bihar)	9	99
Fatehpur (UP)	25	82
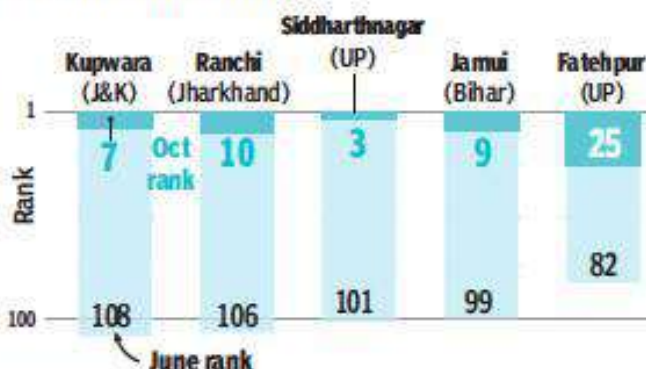
Rank

MOST IMPROVED DISTRICTS IN...

Weights

Education 30%	Rank	Health & nutrition 30%		Agriculture & water resources 20%		Basic infrastructure 10%		Skill development 5%		Financial inclusion 5%	
Virudhunagar (TN)	1	Chitrakoot (UP)	1	Sitamarhi (Bihar)	1	Virudhnagar (TN)	1	Raichur (Karnataka)	1	Kupwara (J&K)	1
Naupada (Odisha)	2	Barwani (MP)	2	Gajapati (Odisha)	2	Naupada (Odisha)	2	Ramgarh (Jharkhand)	2	Baramula (J&K)	2
Gumla (Jharkhand)	3	Vidisha (MP)	3	Dhalal (Tripura)	3	Siddharthan-agar (UP)	3	Dantewada (Chhatisgarh)	3	Raichur (Karnataka)	3

Aspirational districts programme launched in Jan 2018 to improve conditions in 112 districts   Source: NitI Aayog

QS WORLD UNIVERSITY RANKINGS 2022

GS-II   SOCIAL JUSTICE

Context

- Three Indian institutes in the top 200 ranks of the QS World University Rankings 2022.

What's in the News?

- IISc Bengaluru ranked number 1 in the world for research under these rankings. The institute secured a rank of 186 in the universities ranking.
- IIT Bombay secured the 177th position whereas IIT Delhi the 185th rank.

Reasons behind Poor Ranking

- **Low spending by global standards that it holds back India's economic**, technological and strategic ambitions. India's R&D spending amounts to 0.7% of gross domestic product, a fraction of China's 2.1%, let alone Japan's 3.1%.
- **A lax intellectual property regime, foolish sectoral regulations** and a protectionist trade policy have deterred R&D thus reducing industry income.
- **Composition of spending is also skewed. The** government and a few strategic sectors, notably atomic energy, space and defense, account for the bulk of the meagre spending.
- **The contribution of Indian companies, both private and public sector taken together**, to total R&D is just 44% against a global average of 71%.

Figure 1: Criteria of QS World Ranking

- **Indian Higher education is marred with the curse of plagiarism**.
- **Government policies like paying graduate students cash incentives for publishing in the reputed journal creates a bias towards publishing than high** quality science. Indian papers are cited lower compared to those in USA and China.
- **Our school system is focussed on rote-learning than critically thinking**. It also affects the quality of research.
- **Poor quality infrastructure at institutes** is also an issue.

Questions on Rankings

- **Quantified rankings bring conflict between educational values and market values**. Educational values focus on critical thinking, analytical abilities, social agendas and the inculcation of citizenship ideals that are unquantifiable and intangible While Market values are industry-driven, orients the project of neoliberal higher education training towards developing particular skill-sets for the labour market.
- **Rankins are leading to defunding of the public institutions where they are supposed to enhance the income from corporates**. It has an attack on dissent, critical education, and any public institution that might exercise a democratising influence on the nation.
- **Rankings are one Size fits all model where** they do not consider local cultures/societies.
- **Rankings increased focus in on research output fuelling the consumerism**. It violates the basic principle of university: Teaching.
- **Focus on increased international exposure reduces** opportunity for local regions.
- **Focus on publication has resulted in massification in research journals**. Scams have been unearthed about fake journals providing no peer research support.

Steps taken to Improve Rankings

- **Government initiated National Institute Ranking Framework (NIRF)**. Under the NIRF, Educational Institutions are ranked by an independent ranking agency on the basis of objective criteria.
- **Imprint has been launched. Under the IMPRINT, the Government has taken the initiative** to address major engineering challenges through the collaborative efforts of the IITs and Indian Institute of Science (IISc).
- **UcchatarAviskarYojana (UAY) has been initiated. The objectives of UAY scheme** are to promote innovation in IITs, addressing issues of manufacturing industries; to spur innovative mindset; to co-ordinate action between academia & industry and to strengthen labs & research facilities.
- **GIAN scheme facilitates partnership between Higher Educational Institutions of the country** and other countries in order to tap international talent pool of scientists and entrepreneurs.

CHILDREN IN DISTRESS DURING COVID PANDEMIC / *GS-II SOCIAL JUSTICE*

Context
- Ministry of Women and Child Development enlisted some measures to be undertaken by states/UTs in the best interest of the children in distress.

Details
- The Ministry of Women and Child Development has asked the States/UTs to ensure care and protection of children adversely impacted by COVID, following the protocol as mandated under the Juvenile Justice Act, 2015.

The following measures have been enlisted

Identification and Profiling of children
- Identify children in distress through surveys and outreach, etc.
- Create a database with profile of each child along with the details of their specific needs and requirements maintaining required confidentiality.
- Ensure that the data of every child is uploaded on the Track Child Portal of Government of India.

Vigilance and Protection
- Publicize contact details of Child Welfare Committees and Childline (1098) at hospital receptions and other prominent places.
- Police to be alerted to track and monitor the evolving situation carefully, to prevent crimes against children including child labour, child marriage, trafficking and illegal adoptions.
- Database of children at risk to be maintained to ensure follow-up and regular monitoring.
- Suitable measures to be put in place to ensure that financial assistance offered to children is not adjusted against pending loans/other liabilities of their parents.

Emergency Care and Rehabilitation
- Hospitals to take information about persons who can take care of the children in case of any eventuality concerned with the parents.
- Provisions for paediatric and neo-natal care to be ensured.

Institutional support through Child Care Institutions (CCIs)
- Assessment of quality care in all CCIs to ensure clean and hygienic living conditions, basic amenities, etc.
- Proper isolation facilities for children affected by COVID, and other relevant facilities.

Role of District Magistrate and District Administration Guardianship
- District Magistrate shall be the Guardian of vulnerable children impacted adversely by COVID.
- The DM shall make efforts that such children are rehabilitated in the following order of preference, in the manner as prescribed under the JJ Act, 2015:
  - Restored to/rehabilitated with extended family, kith and kin of the child.
  - Adoption (in case children are found legally free for adoption by Child Welfare Committee) through CARINGS portal maintained by Central Adoption Resource Authority (CARA).

- o   Under Government approved Child Care Institutions.
- DMs need to secure the rights of the children on family assets/ancestral properties, to ensure that it is not sold or encroached.
- Institutional Support through CCIs
- District Police team to stay alert and vigilant to prevent trafficking of children, illegal adoption, child marriage, child labour or any other kind of abuse. All cases of children offered for adoption on social media to be traced and action may be taken against the perpetrator if found guilty.

Panchayat Raj Institutions/Urban local bodies
- The child protection committees at Panchayat level to identify and inform District Administration/District Child protection Unit about children in distress.

Education
- Orphaned children to be given free education in government schools.
- Based on the special needs of the child, he/she can be enrolled in the nearest private school under RTE.
- Vocational training to be given if necessary under the Pradhan MantriKaushalVikasYojana (PMKVY).

Medical facilities
- Health Insurance may be secured for eligible children under PM Jan ArogyaYojana.

About Juvenile Justice Act
- **change in nomenclature from 'juvenile' to 'child'** or 'child in conflict with law', across the Act to remove the negative connotation associated with the word "juvenile";
- inclusion of several new definitions such as orphaned, abandoned and surrendered children;
- **petty, serious and heinous offences committed** by children;
- **clarity in powers, function and responsibilities of Juvenile Justice Board (JJB)** and Child Welfare Committee (CWC);
- clear timelines for inquiry by Juvenile Justice Board (JJB);
- **special provisions for heinous offences committed** by children above the age of sixteen year;
- separate new chapter on Adoption to streamline adoption of orphan, abandoned and surrendered children;
- **inclusion of new offences committed** against children;
- **mandatory registration of Child Care Institutions**.

Broad Provisions
- The Juvenile Justice Board is given the option to transfer cases of heinous offences by such children to a Children's Court (Court of Session) after conducting preliminary assessment.
- To streamline adoption procedures for orphan, abandoned and surrendered children, the existing Central Adoption Resource Authority (CARA) is given the status of a statutory body to enable it to perform its function more effectively.
- Processes have been streamlined with timelines for both in-country and inter-country adoption including declaring a child legally free for adoption.
- Under the institutional care, children are provided with various services including education, health, nutrition, de-addiction, treatment of diseases, vocational training, skill development, life skill education, counselling, etc. to help them assume a constructive role in the society.
- Several new offences committed against children are included in the Act. These include: sale and procurement of children for any purpose including illegal adoption, corporal punishment in child care institutions, use of child by militant groups, offences against disabled children and, kidnapping and abduction of children.

OPEN SKIES TREATY

GS-II INTERNATIONAL RELATIONS

Context

- The US has told Russia it will not rejoin an arms control deal that permits unarmed aerial flights over dozens of participating countries.
- In November 2020, the United States left the OST first after accusing Russia of violating the pact– allegations that Russia denied.

What is the Open Skies Treaty?

- First proposed in 1955 by former US President Dwight Eisenhower as a means to deescalate tensions during the Cold War, the landmark treaty was eventually signed in 1992 between **NATO members and former Warsaw Pact countries** following the demise of the Soviet Union.
- It went into effect in 2002 and had **35 signatories**, including key players US and Russia, along with **one non-ratifying member (Kyrgyzstan)**.
- **Aims: Building confidence among members through mutual openness**, thus reducing the chances of accidental war.

What all is allowed under this treaty?

- Under the treaty, a member state can "spy" on any part of the host nation, with the latter's consent.
- A country can undertake aerial imaging over the host state after giving notice 72 hours before, and sharing its exact flight path 24 hours before.
- The information gathered has to be shared with all member states.
- Only approved imaging equipment is permitted on the surveillance flights, and officials from the host state can also stay on board throughout the planned journey.

So, why did the US leave the Open Skies Treaty?

- Many in Washington had **accused Russia of non-compliance with OST protocols, blaming Moscow of obstructing surveillance flights on its territory,** while misusing its own missions for gathering key tactical data.

Why did Russia leave after the US?

- A **contentious issue** regarding Russia's compliance with the OST was its **alleged reluctance to allow flights over Kaliningrad, its exclave in Eastern Europe** that sits between NATO allies Lithuania and Poland.
- Russia defended its position by saying that the restrictions were permissible under treaty rules, and gave the example of the US imposing similar limits on flights over Alaska.
- After the US left the OST, Russia sought assurances from **NATO allies who continued to remain on the treaty that they would not transfer data collected by their flights over Russia to Washington.**
- These requests were not backed by the NATO members, prompting it to leave the treaty.

Significance of the Open Skies Treaty

- It helped to deescalate tensions during the Cold War
- It was launched much before the advent of advanced satellite imaging technology, which is currently the preferred mode for intelligence gathering.

- **Surveillance aircraft provide key information** that **still cannot be gathered by satellite sensors, such as thermal imaging data.**

What happens now that both the US and Russia are out?

- The failure of the Open Skies Treaty follows the demise of another significant arms control accord, the **Intermediate-Range Nuclear Forces (INF) Treaty**, after both the US and Russia left it in 2019.
  - The INF Treaty was signed between the United States and the Soviet Union in 1987, in which both powers agreed **to destroy two categories of lethal missile systems from their own stocks as a means to decelerate the nuclear arms race.**

BIMSTEC	GS-II INTERNATIONAL RELATIONS

Context

- PM Modi addressed on the occasion of 24th BIMSTEC Day.
- BIMSTEC work to build a **secure, peaceful and prosperous Bay of Bengal region.**
- It has emerged as a **promising regional grouping and made progress on several fronts including the finalization of the BIMSTEC Master Plan for Transport Connectivity.**
- India has been making concerted efforts to make BIMSTEC a vibrant forum for regional cooperation as initiatives under SAARC (South Asian Association for Regional Cooperation) were not moving forward.

What is BIMSTEC?

- It is a Bay of Bengal camp, but **two land-locked states — Nepal and Bhutan —** are also part of the seven member-group.
- Five of them are from South Asia — **India, Bangladesh, Nepal, Bhutan, Sri Lanka —** and two from South East Asia — **Myanmar and Thailand**.
- This region is home to around 1.5 billion people which make up for around 22% of the world's population.
- The region has a combined gross domestic product (GDP) of $2.8 trillion.

What is India's interest in the grouping?

- The BIMSTEC is a bridge between South Asia and Southeast Asia.
- The two Southeast Asian countries in the grouping, Myanmar and Thailand, have a crucial place for India's ambitious connectivity plans for northeastern region.
- Myanmar is only Southeast Asian country, with which India has a land boundary. An India-Myanmar-Thailand highway is one of the key projects that figures in a big way in the government's Act East (earlier Look East) policy.
- With the India-Pakistan bickering coming in way of a smooth functioning of the SAARC, BIMSTEC can take forward the concept of regional cooperation in a different manner.

What are the founding principles of the BIMSTEC?

- The cooperation within BIMSTEC will be based on respect for the principle of
  - **sovereign equality**
  - **territorial integrity**
  - **political independence**
  - **non-interference in internal affairs**
  - **peaceful co-existence and mutual benefit.**

What are the priority sectors of the BIMSTEC grouping?

- Seven members of BIMSTEC have so far identified 14 priority sectors.
- India leads two — **counter-terrorism and transnational crime, telecommunication and transport.**

What are India expect from this grouping?

- Connectivity and security cooperation are expected to top the list of the regional grouping.
- India considers connectivity to be an important aspect of the cooperation of the grouping including physical connectivity, grid connectivity, and increasing the people to people contacts.
- The grouping is expected to agree to several measures including a protocol for coastal shipping agreements that could also give sea access to two landlocked countries, Nepal and Bhutan.
- Security cooperation to deal with traditional and non-traditional threats would also be a key focus area at the summit.

What challenges BIMSTEC is facing?

- It is difficult to **bring a consensus among all the five members on global issues,** given that the member countries have regional boundaries issues.
- There is a **huge difference in the economic structure of the member countries**. Therefore, it is inevitable that there will be economic competition and even conflicts also.
- Despite its huge potential, the forum has **long suffered from lack of resources and proper coordination among its member states.**
- India, its largest member, has often been blamed for not providing a strong leadership and Thailand and Myanmar have often seen ignoring BIMSTEC for ASEAN Forum.
- The BIMSTEC Free Trade Agreement (FTA), signed in 2004, is yet to be implemented. The protectionist economies of South Asian countries and so-called national interests are making free trade an unattainable objective.
- **Perception of Indian hegemony**, coupled with over-dependence of BIMSTEC Countries, on China, seems to be a major impediment for this Forum's success.
- The organization currently faces a challenge of **realizing its vision of an integrated economic space and a bridge between South and Southeast Asia that drove its founding members**.
- It presently **lacks a strong institutional framework** to pursue its mandate.

Opportunities associated with this forum

- BIMSTEC, unlike SAARC's subcontinental focus, is the only forum that brings together India's strategic peripheries under one single grouping.
- It can allows India to push a constructive agenda to counter Chinese investments.
- The Kaladan Multimodal project linking India and Myanmar, Trilateral Highway connecting India and Thailand through Myanmar and Bangladesh, Bhutan, India and Nepal (BBIN) agreement can boost connectivity in south Asia and south east Asia.

Way Forward

- BIMSTEC as a Forum is well equipped in facilitating this new regionalism. However, its visibility needs to be enhanced for which its member states should:-
  o Instil in the organization a vision for a cooperative, multilateral regional order, which is based on principles of liberalism, not on unilateralism.
  o **Empower the BIMSTEC secretariat** with greater financial resources enabling it to proactively drive the organization's agenda.
  o **Prioritize sustained physical connectivity and high-quality infrastructure**, to facilitate greater regional flows of goods& services.
  o India's role as an informal leader has to be expanded.
  o **Open BIMSTEC to cooperate with regional powers** committed to inclusive regionalism to include Australia, European Union, Japan, and the United States.

Conclusion

- BIMSTEC holds the **catalytic potential to transform economies of member states** and create a peaceful, prosperous and integrated neighbourhood.

- The road from potential to reality will be successfully traversed only when all actors and stakeholders come together to play their role well to achieve a shared dream of peace, stability and prosperity for this dynamic region.

GLOBAL CORPORATE TAX AND INDIA   / *GS-II INTERNATIONAL RELATIONS*

Context

- **G7 countries have reached a deal on taxing multinational companies**.

More about news

- It has been ratified is to **force multinationals to pay taxes where they operate.**
- The second decision in the agreement commits states to **a global minimum corporate tax rate of 15% to avoid countries undercutting each other.**
- The deal is now likely to be put before a G20 meeting in July this year.
- The deal **aims to end race to the bottom on corporate tax rates as countries compete to lure multinationals**.

> ### G-7
>
> - Group of seven (G-7) is a collective of seven world's most industrialized and developed economies.
> - These seven countries are **Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.**
> - **European Union is also represented at the G-7 summit**. It holds all the privileges and obligations of membership but **without the right to host or chair a summit**.
> - This forum was originally formed to discuss economic and political concerns raised by the 1973 oil crisis - when members of Organization of Petroleum Export Countries (OPEC), increased the price of oil and cut global oil supplies.
> - Since 1975, political leaders of this forum come together **annually to discuss important global economic, political, social and security issues.**
> - Together, the G-7 countries represent 40% of global GDP and 10% of the world's population.
> - Russia belonged to this forum from 1998 to 2014, then it was called as the Group of Eight (G-8), but Russia was expelled following its annexation of Crimea region of Ukraine.
> - The G-7 members are
>   - Leading export countries
>   - Largest gold reserves holder
>   - Largest nuclear energy producers
>   - Top contributors to the UN budget

Objectives

- to **discourage multinationals from shifting profits — and tax revenues — to low-tax countries regardless of where their sales are made**
- to **address the low effective rates of tax shelled out by some of the world's biggest corporations, including digital giants such as Apple, Alphabet and Facebook.**

Losses due to corporate tax abuse

- The **US Treasury loses nearly $50 billion a year to tax cheats**, according to the Tax Justice Network report, with Germany and France also among the top losers.
- **India's annual tax loss due to corporate tax abuse is estimated at over $10 billion**, according to the report.

How will the new tax help?

- The minimum **is expected to make up the bulk of the $50 billion-$80 billion in extra tax** that the OECD estimates firms will end up paying globally under deals on both fronts.

How would the new tax work?

- The **global minimum tax rate would apply to overseas profits**.
- **Governments could still set whatever local corporate tax rate they want, but if companies pay lower rates in a particular country, their home governments could "top-up" their taxes to the minimum rate, eliminating the advantage of shifting profits**.
- Items that are still to be negotiated include whether investment funds and real estate investment trusts should be covered, when to apply the new rate.

Issues

- **Bringing global consensus: challenge of getting all major nations on the same page**, especially since this **impinges on the right of the sovereign to decide a nation's tax policy**.
- **Issues to smaller countries: The Irish economy has boomed with the influx of billions of dollars in investment from multinationals**. Dublin, therefore, is unlikely to accept a higher minimum rate without a fight.
- **Issues to low-tax countries:** Any final agreement **could have major repercussions for low-tax countries and tax havens**. As **some low-tax taking countries such as the Netherlands, Ireland and Luxembourg rely largely on tax rate arbitrage to attract MNCs**.
- **Tax stipulation on Hong Kong** — the seventh-largest tax haven in the world and the largest in Asia would impact China as well. **China's frayed relationship with the US could be a deterrent.**
- **Issues to developing countries:** A lower tax rate is a **tool developing countries can use to alternatively push economic activity.**

Steps undertaken by India

- Finance Minister in 2019 announced a **sharp cut in corporate taxes for domestic companies to 22% and for new domestic manufacturing companies to 15%.**
- The cuts effectively brought India's headline corporate tax rate at par with the average 23% rate in Asian countries.
- India was **engaging with foreign governments with a view to facilitating and enhancing exchange of information under Double Taxation Avoidance Agreements, Tax Information Exchange Agreements and Multilateral Conventions** to plug loopholes.
- Effective enforcement actions including **expeditious investigation in foreign assets cases have been launched, including searches, enquiries, levy of taxes, penalties, etc and filing of prosecution complaints**, wherever applicable.
- To address the challenges posed by the enterprises who conduct their business through digital means the government has the **'Equalisation Levy',** introduced in 2016.
- **IT Act has been amended to bring in the concept of "Significant Economic Presence" for establishing business connection in the case of non-residents in India**.

How will India gain from the minimum tax?

- It will bring equality to those people operating in India but not located in India and therefore not paying any taxes.
- India is likely to benefit from the global minimum 15% corporate tax rate pact as the effective domestic tax rate is above the threshold.

Way forward

- Steps must be taken for its **adoption by all the UN members** to inhibit the creation of tax havens across the world.
- Countries should develop a **consensus over the proposed rate and the categories to which GMCT should be applied.**
- Items that are still to be negotiated include whether investment funds and real estate investment trusts should be covered, when to apply the new rate.

- There should be **appropriate coordination between the application of the new international tax rules including the Digital Services Taxes**.

FINANCIAL ACTION TASK FORCE

Context

- FATF's regional body retains Pakistan on 'enhanced follow-up' for sufficient outstanding requirements.

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 individualsand 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.
- Pakistan was found **non-compliant in cracking down on terror financing** through narcotics and smuggling of mining products including precious stones.
- All in all, Pakistan is now compliant or largely compliant with 31 out of 40 FATF recommendations.

What is FATF?

- The FATF is an inter-governmental body.
- Aim: 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".
- 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.
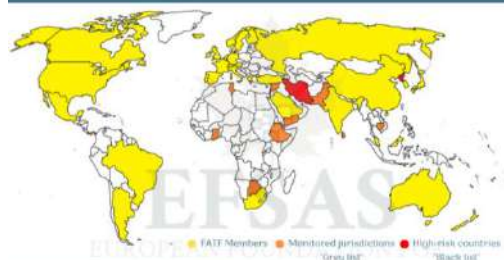
Other countries stand

- **Turkey support**: Turkey proposed that the members should consider Pakistan's good work and an FATF on-site team should visit Pakistan to finalise its assessment.
- Normally such a visit is a signal for exit from the grey or black list.
- It was **not** supported by even **China, Malaysia and Saudi Arabia.**
- China and Saudi Arabia had joined India, US and European countries to send Pakistan a stern message to complete the commitments on terrorist financing and money.

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.

SHANGHAI COOPERATION ORGANISATION   GS-II   INTERNATIONAL RELATIONS

Context

- Cabinet gives ex-post facto nod for signing, ratifying SCO agreement on mass media cooperation.

Agreement benefits

- It is aimed at providing an opportunity to the member states to **share the best practices and new innovations in the field of mass media.**
- **Areas of cooperation:** creation of favorable conditions for wide and mutual distribution of information through mass media to further deepen the knowledge about the lives of the peoples of their states.
- It will promote equal and mutually beneficial cooperation among professional associations of journalists.
- It will assist in broadcasting of television and radio programmes.

- It will **encourage the exchange of experience and specialists in the field of mass media,** provide mutual assistance in training media professionals and encourage cooperation among the educational and scientific research institutions and organizations operating in this field.

What is SCO?

- It is a **Eurasian political, economic, and security alliance.**
- The original five nations, with the exclusion of Uzbekistan, were previously members of the **Shanghai Five group.**
- Since then, the organisation has expanded its membership to eight countries when **India and Pakistan joined SCO as full members on 9 June 2017 at a summit in Astana, Kazakhstan.**
- **The Heads of State Council (HSC)** is the supreme decision-making body in the SCO.
- It is the **largest regional organisation in the world in terms of geographical coverage and population, covering three-fifths of the Eurasian continent** and nearly half of the human population.
- The SCO is widely regarded as the **"alliance of the East",** due to its growing centrality in Asia-Pacific, and has been the primary security pillar of the region.
- The **Regional Anti-Terrorist Structure (RATS),** headquartered in Tashkent, Uzbekistan, is a **permanent organ of the SCO**, which serves to **promote cooperation of member states against the three evils of terrorism, separatism and extremism.**

Criticisms of the SCO

- It is used by member states to **shield each other from international criticism regarding human rights violations.**
- SCO is struggling to emerge as a cohesive organisation because it **lacks coherence on account of China's pre-pondering influence.**

Member states[15]
Observer states
Dialogue partners
Guest attendances
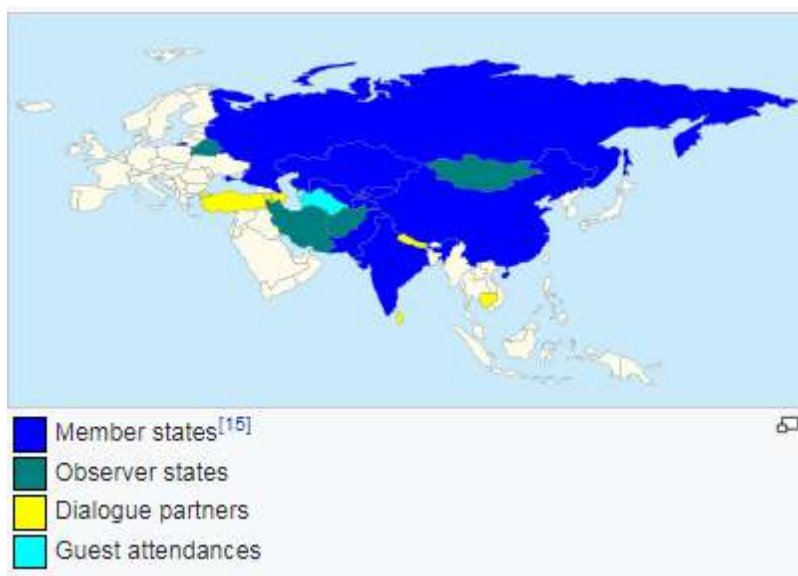
India-SCO

- It is the only regional grouping in the vast Eurasian space.
- SCO **provides a robust platform for connecting with countries of Central Asia** with whom India shares millennia of vibrant, multifaceted linkages.
- **Central Asia and Afghanistan are vital for India's security**, meeting its **energy requirements**, connectivity, trade and economic progress and growth.
- India through its active participation has strengthened greater trade, economic and cultural cooperation within SCO by putting **human beings at the center** of SCO activities.
- India's initiatives have emphasised its commitment to expanding its partnership with SCO by playing a proactive, positive and constructive role in the organisation.

BRICS AND COVID-19 CHALLENGE

GS-II INTERNATIONAL RELATIONS

Context

- BRICS foreign ministers hold virtual meeting to discuss Covid-19 challenge.
- **India hosted the meeting** in its capacity as the chair of BRICS — Brazil-Russia-India-China-South Africa.
- All BRICS countries agreed to support proposal by South Africa and India at the WTO seeking a **patent waiver for Covid-19 vaccines.**

Key highlights

- For the first time, BRICS foreign ministers have agreed on a common, standalone joint statement on **reforming the multilateral system.**
- They called for further consolidation and strengthening of the working methods of UN Security Council Sanctions Committees to ensure their effectiveness, responsiveness and transparency.
- Four key deliverables were identified that are
  - **reform of the multilateral system,**

- o **counter-terrorism cooperation,**
- o **using digital and technological solutions to achieve SDGs, and**
- o **enhancing people-to-people cooperation.**

What is BRICS? How did these countries come together?

- It is an informal group of states comprising the Federative Republic of Brazil, the Russian Federation, the Republic of India, the People's Republic of China and the Republic of South Africa.
- It is actually a forum than a traditional-type organization with rigid membership and regulations.
- Originally the first four were grouped as "BRIC" (or "the BRICs"), before the induction of South Africa in 2010.
- At the Fortaleza Summit (2014), in Brazil,the New Development Bank (NDB) and the Contingent Reserve Arrangement (CRA) were created
- Among other areas of collaboration, matters pertaining to drug trafficking is an important area of cooperation among the BRICS member states.

What challenges BRICS is facing?

- **Disagreements between its members.**
- **Slow progress shown on the ground** when it comes to implementation of initiatives makes it quite vulnerable to criticism.
- The development trends of the BRICS nations are not very similar, as there is a **huge difference in the economic structure of the member countries.**
- The members also have **differences over the UN Security Council (UNSC) reforms.** It will be tough for the member countries to **make a consensus on contemporary global issues.**
- The burden of the **NDB cannot be shared equally, as the size of the economy of each member varies with great magnitude.** So, it is inevitable that the **disputes will arise in sharing the burden of NDB.**

BRICS and COVID-19

- Most of its programs and mechanisms proved to be effective during the pandemic.
- The **BRICS Science, Technology and Innovation (STI) Framework Programme**, helped scientists and researchers to effectively exchange their findings to better facilitate a common response.
- It worked better than other global governance institutions amidst the ongoing COVID crises.
- There was **no blame-game or pointing fingers within BRICS**, rather there is only a common vision for intensifying cooperation, including in sectors like healthcare, social welfare.
- BRICS has progressed on developing a common position on the most important matters of the global economy and security.

Way Ahead

- It is now important for the BRICS nations to engage in the grouping at the highest level **to change the world order to counter the US supremacy.**
- BRICS forum should be effectively utilized for consultation, coordination and cooperation on contemporary global issues of mutual interest and promoting mutual understanding.
- The future of BRICS depends on the adjustment of the internal and external issues of India, China and Russia.
- Mutual communication between India, China and Russia is important for moving ahead.

FOOD AND AGRICULTURE ORGANIZATION	*GS-II INTERNATIONAL RELATIONS*

Context

- Union Minister of Agriculture and Farmers' Welfare addresses the 42nd session of FAO Conference.

India and FAO

- India is a **founder member of the FAO** and has played significant role since inception as Chair and member of various statutory bodies and committees.
- **The Country Program Framework prepared by FAO** India in collaboration with Ministry of Agriculture and Farmers Welfare, Government of India is aligned with national priorities and has a much required multi sectoral approach.
- FAO has benefitted from India's vast repository of knowledge, which is shared globally among the member countries.
- India has been working closely with FAO, extending technical expertise and assistance in incidences of trans-boundary pests mainly Fall Army Worm and Desert Locust.
- India has launched various projects under the National Mission on Sustainable Agriculture to develop, demonstrate and disseminate the techniques to make agriculture resilient to adverse impacts of climate change.
- India is promoting Organic farming at a large scale.

About FAO

- The Food and Agriculture Organization of the United Nations (FAO) is a **specialized agency of the United Nations** that leads international efforts **to defeat hunger and improve nutrition and food security.**
- FAO is composed of 197 member states.
- It is headquartered in Rome, Italy.
- 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.
- The **FAO's Regular Programme budget is funded by its members**, through contributions set at the FAO Conference.
- This budget covers core technical work, cooperation and partnerships including the Technical Cooperation Programme, knowledge exchange, policy and advocacy, direction and administration, governance and security.

Codex Alimentarius Commission

- FAO and the World Health Organization created the Codex Alimentarius Commission in 1961 to **develop food standards, guidelines and texts such as codes of practice under the Joint FAO/WHO Food Standards Programme.**
- The main aims of the programme are **protecting consumer health, ensuring fair trade and promoting co-ordination of all food standards work** undertaken by intergovernmental and non-governmental organization.

FAO priorities

- Help eliminate hunger, food insecurity and malnutrition
- Make agriculture, forestry and fisheries more productive and sustainable
- Reduce rural poverty
- Enable inclusive and efficient agricultural and food systems
- Increase the resilience of livelihoods to threats and crises
- Two fundamental areas of work **– gender and governance –** are fully integrated in the above strategic objective action plans.

GENERAL STUDIES – III

| 4 YEARS OF GST | *GS-III ECONOMY* |

Goods and Services Tax

- GST, or Goods and Services Tax, is an indirect tax that customers have to bear when they buy any goods or services, such as food, clothes, electronics, items of daily needs, transportation, travel, etc.
- It is levied on the manufacturer or seller goods and the providers of services.
- The sellers usually add the tax expense into their costs, and the price the customers pay is inclusive of GST.

Main Features of GST

- **Applicable On supply side:** GST is applicable on 'supply' of goods or services as against the old concept on the manufacture of goods or on sale of goods or on provision of services.
- **Destination based Taxation**: GST is based on the principle of destination-based consumption taxation as against the present principle of origin-based taxation.
- **Dual GST:** It is a dual GST with the Centre and the States simultaneously levying tax on a common base. GST to be levied by the Centre is called Central GST (CGST) and that to be levied by the States is called State GST (SGST).

Growth in Collection

1.03 (Apr'18) 1.14 (Apr'19) 1.05 (Feb'20) 1.41 (Apr'21)

(in Rs. lakh crore)
Covid pandemic started in March 2020

- **Import of goods or services would be treated as inter-state supplies** and would be subject to Integrated Goods & Services Tax (IGST) in addition to the applicable customs duties.
- **GST rates to be mutually decided: CGST, SGST & IGST are levied at rates to** be mutually agreed upon by the Centre and the States. The rates are notified on the recommendation of the GST Council.
- **Multiple Rates: Initially GST was levied at four rates viz. 5%, 12%, 16**% and 28%. The schedule or list of items that would fall under these multiple slabs are worked out by the GST council.
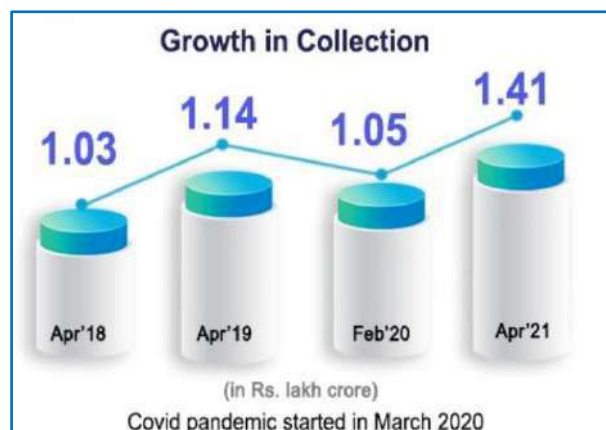
Success of 4 years of GST

- **GST was brought in as a revolutionary change and India's biggest tax system overhaul since Independence**. GST replaced a plethora of indirect taxes such as states' sales tax, service tax, excise, etc., with a single central tax regime applied uniformly on all products and services.
- However, **the biggest benefit of GST was that it opened up entire India as a single unified market allowing for free movement** of goods across states' borders, as opposed to the earlier scenario where state borders became barriers.
- **GST allowed for faster movement of trucks and led to requirements fo**r fewer warehouses across several states.
- **overall rates have been reduced on 400 goods and 75 services**.
- It **simplified compliance and saved from the hassles caused** by different tax regimes in different states.
- GST has reduced the rate at which people have to pay tax. The revenue neutral rate as recommended by **the RNR Committee was 15.3%. Compared to this, the weighted GST rate at present, according to the RBI, is only 11.6%.**

Challenges with GST

Politics influence the decision of GST Council

- The GST Council **was mandated to meet at least once every quarter, but it had not met for two** quarters, due to the pandemic. And ruling party government is not pushing for the meeting of GST council.
- Even **the need for a meeting to determine tax revenues for States is** evidently a political decision.

Lack of trust

- The tragedy of the GST Council is that it is afflicted **with spite and forced to function** under the prevailing cloud of politics.
- If the **functioning of the GST Council is subject to the vagaries of elections and** consequent vendetta politics, GST will continue to be just a caricature of its initial promise.

Uncertainty after the guarantee of 14% growth ends

- revenue guarantee of 14% growth to state's revenues ends in July 2022.
- This can lead to a crumbling of the precarious edifice on which GST stands today.

Challenges According to 15th Finance Commission:

- large shortfall in collections as compared to original forecast,
- high volatility in collections,
- accumulation of large integrated GST credit,
- glitches in invoice and input tax matching,
- delay in refunds.

What are the different types of GST?

- Central GST (CGST): GST paid on each transaction is divided into two equal parts: the part for the Centre is termed as
- CGST.
- State GST (SGST): The part of a state's share of GST, when a transaction takes place within the state, is called SGST.
- Union territory GST (UGST): When a transaction takes place within a union territory (UT) without a legislature, the part of GST that the UT gets is called UGST.
- Integrated GST (IGST): When a transaction takes place between two states/UTs or between a state/UT and any foreign territory, IGST is levied without any bifurcation on the applicable GST rate.

What items are not taxed or covered under GST?

- There are a few products, which were not under the purview of GST till long after its launch.
- **Alcohol for human consumption**: On alcohol, the power to tax remains with the states.
- **Petroleum products:** GST was not imposed on five petroleum products — crude oil, diesel, petrol, natural gas and ATF.
- **Tobacco**: Along with GST, the Central Government has the power to levy additional excise duty on tobacco products.
- **Entertainment tax: The power** to decide on entertainment tax levied by local bodies remains with the **states.**
- **Also, there are some exceptions on Indian Railways tickets, where instead of the destination, the origin of the journey is taken** into consideration. For example, if Rajdhani Express is registered in Delhi, on the tickets from Delhi, CGST an SGST will be levied, while IGST will be charged when the journey originates at a place other than Delhi.

GST Council

- The **GST council is the key decision-making body that take all important decisions regarding the GST.**
- The GST Council dictates tax rate, tax exemption, the due date of forms, tax laws, and tax deadlines, keeping in mind special rates and provisions for some states.
- The predominant responsibility of the GST Council is to ensure to have one uniform tax rate for goods and services across the nation.

Structure of GST Council

- GST Council is a joint forum for the Centre and the States. It consists of the following members:
  o The Union Finance Minister is the Chairperson
  o As a member, the Union Minister of State is the in charge of Revenue of Finance
  o The Minister in charge of finance or taxation or any other Minister nominated by each State government, as members.

GST Council recommendations

- Article 279A (4) specifies that the Council can make recommendations to the Union and the States on the important issues related to GST, such as, the goods and services will be subject or exempted from the Goods and Services Tax.

DIGITAL MILLENNIUM COPYRIGHT ACT (DMCA) — GS-III ECONOMY

Context

- **Union Minister for Electronics and Information Technology and for Law and Justice was locked out of his Twitter account for an hour** allegedly over a notice received for violation of the Digital Millennium Copyright Act (DMCA).
- The **DMCA oversees the implementation of two 1996 treaties signed by World Intellectual Property Organisation (WIPO)** member nations.

Evolution of DMCA

- WIPO members had in **December 1996 agreed upon two treaties, namely the WIPO Copyright Treaty and the WIPO Performances** and Phonograms Treaty.
- Both the **treaties require member nations and signatories to provide in their respective jurisdictions, protection to intellectual property** that may have been created by citizens of different nations who are also co-signatories to the treaty.

About DMCA

- The Digital Millennium Copyright Act, or DMCA, is a 1998 law passed in the US and is among the world's first laws recognising intellectual property on the internet.
- The said protection, accorded by each member state, must not be any less in any way than the one being given to a domestic copyright holder.
- It also obligates that signatories to the **treaty ensure ways to prevent circumvention of the technical measures used to protect copyrig**hted work.
- It also **provides the necessary international legal protection to** digital content.

Need of the DMCA

- With the rapid commercialization of internet in late 1990s, which started with static advertisement panels being displayed on the internet, it **became important for website owners to get the user to spend more time on their webpage.**
- For this, fresh content was generated by creators and shared over the Internet.
- The problem **started when the content would be copied by unscrupulous websites or users**, who did not generate content on their own.
- Further, as the Internet expanded worldwide, **websites from countries other than the one where the content originated, also started to copy the unique** content generated by the websites.
- To avoid this and bring to task the unauthorized copiers, the members of WIPO, which was **established in 1967, also agreed to extend the copyright and intellectual property protection to digital content.**
- As of date, 193 nations across the world, including India, are members of WIPO.

Implementation of the DMCA

- **Any content creator of any form, who believes that their original content has been copied** by user or a website without authorization can file an application citing their intellectual property has been stolen or violated.
- **Users can either approach the website on which the content has been** hosted, or third party service providers like DMCA.com, which utilise a team of experts to help take down the stolen content for a small fee.
- In the case of social media intermediaries like Facebook, Instagram or **Twitter, content creators can directly approach the platform with a proof of them being original creators.**
- Since these **companies operate in nations, which are signatories to the WIPO treaty, they are obligated to remove the said content** if they receive a valid and legal DMCA takedown notice.
- Platforms, **however, also give the other users against whom allegations of content cheating have been made, a chance** to reply to the DMCA notice by filing a counter notice.
- The platform **shall then decide which party is telling the truth**, and shall accordingly, either restore the content or keep it hidden.

PRODUCT LINKED INCENTIVE SCHEME   *GS-III   ECONOMY*

Context

- The Department of Telecom issued operational guidelines for the performance-linked incentive (PLI) scheme for the sector.

Details of the scheme

- The scheme would take effect from April 1, 2021.
- The scheme **stipulates a minimum investment threshold of ☐10 crore for MSMEs** and ☐100 crore for non-MSME applicants.
- **Land and building costs will not be counted as investment**.
- Eligibility would be further subject to incremental sales of manufactured goods.
- DoT **would grant approvals to 10 eligible applications each in the MSME and non-MSME categorie**s. Out of the 10 applications in the non-MSME category, at least three would be eligible domestic companies.

About the PLI scheme

- Support under the **Scheme will be provided to companies/entities engaged in manufacturing of specified telecom and networking** products in India.
- Eligibility will be further subject to achievement of a minimum threshold of cumulative incremental investment over a period of four years and incremental sales of manufactured goods net of taxes (as distinct from traded goods) over the Base Year 2019-2020.
- This **scheme is part of the umbrella scheme approved by the cabinet in November 2020 for implementation of PLI under** various Ministries/ Departments including Department of Telecommunications (DoT).
- There will be a **minimum investment threshold of Rs.10 crore for MSME with incentives from 7% to 4 % and Rs. 100 crore for others with incentives** from 6% to 4 % over 5 year above Base Year. The applicants with higher investments than specified threshold under MSME and Non MSME categories will be selected through transparent process.

Benefits

- The Production Linked Incentive (PLI) Scheme intends to **promote manufacture of Telecom and Networking Products in India and proposes a** financial incentive to boost domestic manufacturing and attract investments in the target segments of telecom and networking products in order to encourage Make in India.
- The scheme **will also encourage exports of telecom and network**ing products 'Made in India'.Globally Telecom and **Networking Products exports represent an US$100 billion market opportunity**, which can be exploited by India.

- With support under the scheme, India will augment capacities by attracting large investments from global players **and at the same time encourage promising domestic champion companies** to seize the emerging opportunities and become big players in the export market.
- India will be **well positioned as a global hub for manufacturing of Telecom and Networking** Products. Incremental production around Rs. 2 Lakh crore is expected to be achieved over 5 years. India will improve its competitiveness in manufacturing with increased value addition.
- It is expected **that scheme will bring more than Rs. 3,000 crore investment and generate huge direct and indirect employments.**
- Provision of higher incentive to MSME will encourage domestic telecom manufacturers to become part of the global supply chain.

Challenges with the PLI Scheme

- In India for the majority of **the PLI Scheme focussed sectors the effective cost of manufacturing is higher than the competitors.** For example, Ernst & Young study shows that if the cost of production of one mobile is Rs.100. Then the effective cost of manufacturing the mobile is 79.55 in China, 89.05 in Vietnam, and 92.51 in India(including PLI).
- **Challenges to domestic firms: The Scheme will benefit the international player more than the Domestic firms.** As the international players can invest their revenues and produce in India and take domestic market share.
- **lack of cutting edge technology and Foundries: India so far not focussed on adequate R&D development and Raw machinery**. This resulted in poor talent retention and eventually 'brain drain'. So, the development of industries under the PLI Scheme is questionable.
- It will **only help companies that don't plan on indigenous product development** of telecom equipment, and will only lead to assembly.
- Scheme is **skewed towards contract manufacturers at the cost of companies** who are investing top dollars in R&D to develop the products.
- There are **also issues related to custom duty on components for telecom equipment**, which will impact the cost effectiveness of local manufacturing at a time when the duty on finished product hasn't been increased accordingly.

Way Forward

- The government must also focus on the service industry also. As other countries like China focus on the development of both Manufacture and Service sectors simultaneously in the long run.
- Focus of the government must be on developing the ease of doing business and improving the logistics which will lead to cost effectiveness for all the industries.

REGULATION OF CRYPTOCURRENCY   *GS-III ECONOMY*

Context

- Recently, **El Salvador became the first country in the** world to adopt bitcoin as legal tender.

About the Cryptocurrency

- A **cryptocurrency is a form of digital asset based on a** network that is distributed across a large number of computers.
- **Cryptocurrencies typically use decentralized control as opposed** to centralized digital currency and central banking systems.
- Blockchains, which are organizational methods for ensuring the integrity of transactional data, are an essential component of many cryptocurrencies.

Benefits of Cryptocurrency

- **Autonomy: Digital currencies allow users more autonomy over their own** money than fiat currencies do, at least in theory. Users are able to control how they spend their money without dealing with an intermediary authority like a bank or government.
- **Discretion: Bitcoin purchases are discreet. Unless a user voluntarily publishes his Bitcoin transactions,** his purchases are never associated with his personal identity, much like cash-only purchases, and cannot easily be traced back to him.
- **Peer-to-Peer Focus :Thebitcoin payment system is purely peer-to-peer, meaning that users are able to send** and receive payments to or from anyone on the network around the world without requiring approval from any external source or authority.
- **Elimination of Banking fees: bitcoin users are not subject to the litany of traditional banking fees associated with fiat** currencies. This means no account maintenance or minimum balance fees, no overdraft charges and no returned deposit fees, among many others.
- **Accessibility: bitcoin is theoretically available to populations of users without access to traditio**nal banking systems, credit cards and other methods of payment.

Challenges with Cryptocurrency

- **Can be used for illegal transactions – Since the privacy and security of cryptocurrency transactions are high**, it's hard for the government to track down any user by their wallet address or keep tabs on their data.
- **Decentralized but still operated by some organization –The cryptocurrencies are known for its feature of being decentralized**. But, the flow and amount of some currencies in the market are still controlled by their creators and some organizations. These holders can manipulate the coin for large swings in its price.
- **Adverse Effects of mining on the environment –** Mining cryptocurrencies require a lot of computational power and electricity input, making it highly energy-intensive.
- **Security Risk: Bitcoin exchanges are digital and therefore** vulnerable to hackers, operational glitches, and malware.
- **Decentralised Control: Given the essentially decentralized control approach associated with cryptocurrencies** like the Bitcoin as against the traditional centralized digital currency and centralized banking systems, they render government monetary policies ineffective.

Indian stand on cryptocurrency

- The **Ministry of Corporate Affairs (MCA) has made it mandatory** for companies to disclose crypto trading/investments during the financial year.
- The **Centre has assured crypto stakeholders that there won't be a blanket ban on digital currencies and** that it's still formulating its full opinion on the matter. Finance minister Nirmala Sitharaman has said the Centre was open to experimentation with new technologies and is not closing its minds for them.
- India **does not have a regulatory framework to govern cryptocurrencies** as of now. The government had constituted an Inter-Ministerial Committee (IMC) on November 2, 2017, to study virtual currencies.

Way Forward

- **Learning from international experience: The U.K. has classified cryptocurrency as property and this has paved the way for cryptocurrencies** to be encompassed within a regulated legal framework in the country's economy. The U.K. has sought to regulate the functioning of crypto-businesses while still imposing some restrictions to protect the interests of investors.
- **There is a need for a balanced regulation of the cryptocurrency which could allow private individuals the freedom to harness** a powerful new technology like blockchain technology-based digital currency with appropriate regulatory standards.

Conclusion

- The **government should use this as an opportunity to allow private individuals the freedom to harness a powerful** new technology with appropriate regulatory standards.

GDP DATA

GS-III ECONOMY

Context

- India's Gross Domestic Product (GDP) **contracted by 7.3% in 2020-21**, as per provisional National Income estimates released by the National Statistical Office.

Details

- This is the first **full-year contraction in the Indian economy** in the last four decades since 1979-80, when GDP had shrunk by 5.2 per cent.
- GDP growth in 2019-20, prior to the COVID-19 pandemic, was 4%.
- The **Gross Value Added (GVA) shrank 6.2**% in 2020-21, compared to a 4.1% rise in 2019-20.
- Only **two sectors recorded positive GVA growth — agriculture, forestry and fishing**, which rose 3.6%, and electricity, gas, water supply and other utility services (up 1.9%).
- According to economists, these numbers would moderate growth prospects for 2021-22 through the base effect, even as the burden of the virus is hurting economic activity.
- The combination of the second wave and the revised base effect may imply a lower GDP growth for the Indian economy for 2021-22.

Gross Domestic Product (GDP)

- Gross Domestic Product is the value of all final goods and services produced in the domestic territory of the country during a financial year.
- GDP includes only purchases of newly produced goods and services and does not include sale or resale of used goods (but services provided in reselling are included in GDP).

What is domestic territory?

- It includes political/geographical boundaries of the country including territorial waters and airspace.
- Ships and aircraft owned and operated by residents between two or more countries. For example, Air India flight between Japan and China is part of the domestic territory of India.
- Fishing vessels, oil and natural gas rigs and floating platforms operated by a resident of a country in the international waters. For example, Fishing boat operated by Indian fishermen in the international waters of the Indian Ocean.
- Embassies, Consulate and Military establishments of a country located abroad.

Goods

- Goods, in simple terms, are material things that satisfy human needs.
- Goods can be classified as:
- Final Goods: Final Goods can be further classified as: − Consumption/Consumer Goods − Capital/Producer Goods » Intermediate Goods

Financial/Fiscal/Accounting Year

- It is a period of 12 months, used by governments, businesses, and other organizations in order to calculate budget, profit, losses, etc.
- In India, this period starts from 1st April and ends on 31st March.

Different uses of the concept of GDP

- To **determine the growth rate of an economy**. The growth rate of 6% means that the size of the economy has increased by 6% from last year.
- It is a **quantitative concept and its volume indicate the 'strength' of the economy**. But it does not tell anything about the 'qualitative' aspects of the economy. For example, GDP will talk about the value of goods that a country produces but it will not talk about the quality of goods produced by the country. It also does not focus on any negative impacts this process has on the stakeholders.
- For example, **pollution as a byproduct of economic activity** is not considered while calculation of GDP.
- It is used for the comparative analysis by international organizations like IMF etc.

UNCTAD REPORT ON FDI EQUITY INFLOWS

GS-III ECONOMY

Context
- According to the United Nations Conference on Trade and Development (UNCTAD) report, India is among the countries that have witnessed a positive growth rate in FDI equity inflows in 2020 as compared to 2019.

Key highlights of the report
- While **major economies like the USA, Singapore, Germany, Brazil, Canada, UAE** have seen a negative trend.
- Mauritius is the top investing country with 24 per cent equity inflows in April. It is followed by Singapore, which continues to be one of the top sources of FDI for India with 21 per cent inflows. Japan ranked third with 11 per cent of FDI inflows.

India's specific
- India has **seen a growth of 25 per cent in 2020 as compared** to 2019.
- India is **5th largest recipient of FDI inflow in the world in 2020.** India's FDI inflow increases 38% to $6.24 billion in April 2021.
- Total FDI comprises equity capital of unincorporated entities, re-investment earnings and other capital.
- As far as the states are concerned, **Karnataka is the top recipient state with a 31 percent** share in the total FDI equity inflows during April 2021, followed by Maharashtra at 19 per cent and Delhi at 15 per cent.
- **Computer software and hardware remain top sector for FDI, followed by 23 percent** in the service sector and 8 per cent in the education sector, respectively.

Government measures increase FDI
- Reforming the Foreign Direct Investment (FDI) policy
- measures taken on the front of investment facilitation and ease of doing business.

Types of foreign investment
- **Automatic Route:** Under the Automatic Route, the non-resident investor or the Indian company does not require any approval from the Government of India for the investment.
  - Reserve Bank of India is in charge of the Automatic Route.
- **Government Approval Route:** Under the Government Approval Route, prior to investment, approval from the Government of India is required.
- Proposals for foreign direct investment under Government route, are considered by respective Administrative Ministry/ Department.
- Earlier the **Foreign Investment Promotion Board (FIPB) and Secretariat for Industrial Assistance (SIA)** was in charge of recommending Foreign Direct Investment (FDI) which does not come under the automatic route.
- However, FIPB was abolished in 2017, and its power was given to the respective Administrative Ministries/ Departments.
- Acquisition of shares and amounts remitted through RBI"s NRI Schemes are also considered as FDI.

Sectors in which FDI is prohibited

- **FDI is prohibited in:**
  - Lottery Business including Government/private lottery, online lotteries, etc.
  - Gambling and Betting including casinos etc.
  - Chit funds
  - Nidhi company
  - Trading in Transferable Development Rights (TDRs)
  - Real Estate Business or Construction of Farm Houses
  - Manufacturing of cigars, cheroots, cigarillos and cigarettes, of tobacco or of tobacco substitutes
  - Activities/sectors not open to private sector investment e.g.(I) Atomic Energy and (II) Railway operations (other than permitted activities).

Foreign Portfolio Investment (FPI)

- Investor does not have direct control/management of investments
- No control or share in the assets or the property hence provides more liquidity.
- More suited for average retail investor

Foreign Direct Investment (FDI)

- Direct control over the assets and say in the affairs of the company
- Investor is tied up with the affairs of the company at faces higher risk.
- Preferred mode for companies, high-net-worth individuals and institutional investors

MONETARY POLICY MEET

GS-III ECONOMY

Context

- The Reserve Bank of India (RBI) has left the benchmark interest rates unchanged.

Details of decisions of Monetary Policy Committee

- The **policy repo rate remains unchanged at 4%.**
- It has reiterated that it **would retain its accommodative stance for as long** as necessary to revive and sustain growth on a durable basis.
- Also, it **cut its GDP growth forecast for the fiscal year** 2021-22 by 100 basis points to 9.5%.
- It marginally raised its projection for CPI inflation during 2021-22 to 5.1%.

About Monetary Policy

- The **Reserve Bank of India (RBI) is vested with the responsibility of conducting** monetary policy. This responsibility is explicitly mandated under the Reserve Bank of India Act, 1934.

Goals of Monetary Policy

- The primary objective of monetary **policy is to maintain price stability while keeping in mind the objective of growth. Price stability is** a necessary precondition to sustainable growth.
- In **May 2016, the Reserve Bank of India (RBI) Act, 1934 was amended** to provide a statutory basis for the implementation of the flexible inflation targeting framework.
- The amended RBI Act also provides for the inflation target to be set by the Government of India, in consultation with the Reserve Bank, once in every five years.
- The Central Government has **asked inflation rate target to be in 4%+- 2%.**
- The Central Government notified the following as factors that constitute failure to achieve the inflation target:
  - the average inflation is more than the upper tolerance level of the inflation target for any three consecutive quarters; or
  - the average inflation is less than the lower tolerance level for any three consecutive quarters.

Monetary Policy Framework

- The framework aims at setting the policy (repo) rate based on an assessment of the current and evolving macroeconomic situation; and modulation of liquidity conditions to anchor money market rates at or around the repo rate.
- The operating framework is fine-tuned and revised depending on the evolving financial market and monetary

conditions, while ensuring consistency with the monetary policy stance.

Composition of MPC

- The **committee will have six members**. Of the six members, the government will nominate three. No government official will be nominated to the MPC.
- The other three members would be from the RBI with the governor being the ex-officio chairperson. Deputy governor of RBI in charge of the monetary policy will be a member, as also an executive director of the central bank.

Selection and term of members

- **Selection: The government nominees to the MPC will be selected by a Search-cum-Selection Committee** under Cabinet Secretary with RBI Governor and Economic Affairs Secretary and three experts in the field of economics or banking or finance or monetary policy as its members.
- **Term: Members of the MPC will be appointed for a period of four years and shall not be eligible** for reappointment.

Making of decisions

- Decisions will be **taken by majority vote with each member having a vote.**
- RBI governor's role: The RBI Governor will chair the committee. The governor, however, will not enjoy a veto power to overrule the other panel members, but will have a casting vote in case of a tie.

Instruments of Monetary Policy

- **Repo Rate: The** (fixed) interest rate at which the Reserve Bank provides overnight liquidity to banks against the collateral of government and other approved securities under the liquidity adjustment facility (LAF).
- **Reverse Repo Rate**: The (fixed) interest rate at which the Reserve Bank absorbs liquidity, on an overnight basis, from banks against the collateral of eligible government securities under the LAF.
- **Liquidity Adjustment Facility (LAF):** The LAF consists of overnight as well as term repo auctions. Progressively, the Reserve Bank has increased the proportion of liquidity injected under fine-tuning variable rate repo auctions of range of tenors.
- **Marginal Standing Facility (MSF):** A facility under which scheduled commercial banks can borrow additional amount of overnight money from the Reserve Bank by dipping into their Statutory Liquidity Ratio (SLR) portfolio up to a limit at a penal rate of interest.
- **Bank Rate:** It is the rate at which the Reserve Bank is ready to buy or rediscount bills of exchange or other commercial papers.. This rate has been aligned to the MSF rate and, therefore, changes automatically as and when the MSF rate changes alongside policy repo rate changes.
- **Cash Reserve Ratio (CRR):** The average daily balance that a bank is required to maintain with the Reserve Bank as a share of such per cent of its Net demand and time liabilities (NDTL) that the Reserve Bank may notify from time to time in the Gazette of India.
- **Statutory Liquidity Ratio (SLR):** The share of NDTL that a bank is required to maintain in safe and liquid assets, such as, unencumbered government securities, cash and gold. Changes in SLR often influence the availability of resources in the banking system for lending to the private sector.
- **Open Market Operations (OMOs):** These include both, outright purchase and sale of government securities, for injection and absorption of durable liquidity, respectively.
- **Market Stabilization Scheme (MSS**): This instrument for monetary management was introduced in 2004. Surplus liquidity of a more enduring nature arising from large capital inflows is absorbed through sale of short-dated government securities and treasury bills. The cash so mobilised is held in a separate government account with the Reserve Bank.

INDIA DIGITAL ECOSYSTEM OF AGRICULTURE (IDEA) / GS-III AGRICULTURE

Context
- The Centre published a consultation paper on an India Digital Ecosystem of Agriculture (IDEA) and sought public feedback by the end of the month.
- IDEA lays out a proposed framework for 'AgriStack'.

Background
- Recently, the Ministry of Agriculture had signed a Memorandum of Understanding with Microsoft to run a pilot programme for 100 villages in 6 states.

MOUs includes
- 'Farmer data sanitization', land profiling and crop estimation using remote sensing
- Mobile applications, for pre- and post-harvest advisories.
- A mobile application for advising farmers on soil nutrition, accurate quantification on farmer crop and yield, fertilizer recommendations, and training farmers for using this application
- A **"National Agri Data Stack"** that can serve as a foundational data layer on which "agri-focused solutions" will be built.
- It will also offer its cloud services to solution providers to help build **"solutions across agri value chain"** and will also help agriculture related start-ups.
- A **'national agriculture geo hub',** will provide the required GIS tools and technologies and create and collate farmer and other agriculture data services on GIS platform
- Under the MoU government aims to provide 'required data sets' of farmers' personal information to Microsoft to develop a **'Unified Farmer Service Interface'** through its cloud computing services for **'smart and well-organised agriculture'.**
- This will be a part of **'AgriStack'** that the Govt. envisages to create.
- Agristack is a collection of technology-based interventions in agriculture, on which everything else will be built.
- Agristack will create "a unified platform for farmers to provide them end to end services across the agriculture food value chain.
- Each farmer will have a unique digital identification that contains personal details, information about the land they farm, as well as production and financial details. Each ID will be linked to the individual's digital national ID Aadhaar.
- With these, agriculture will become the latest sector getting a boost of **'techno solutionism'** by the government.

Significance
- Digital farming technologies and services, including sensors to monitor cattle, drones to analyze soil and apply pesticide, can improve yields and significantly boost farmers' incomes.
- As of now most of the farmers are small and marginal who are deprived of formal credit and advanced technologies. This results in poor incomes.

Major Concerns
- **Absence of a data protection legislation** - private entities could exploit farmers' data to whatever extent they wish to.
- **Commercialisation of agriculture-**Agristack could strengthen the asymmetry in information flow by providing all information about farmers and their farming easily to corporations who looked at farmers as a consumer base, be it agri inputs — seed, chemical fertiliser and pesticides, machinery companies or fin-tech companies and to those for whom farmers were suppliers like the food industry, garment industry, etc,
- **Purposeless Non-disclosure agreement** - Although there is a non-disclosure agreement in the MoU, there is also a clause on 'limitation of liability'.The net result is that farmers' data is being provided to the companies at their

word with little consequence for breaking it.

- **No Dispute Settlement Mechanism-** If land dispute arises
- **Exclusion of landless cultivators** -Digitisation can also exclude pastoral communities, Dalits and indigenous people who are often prevented from owning land.These cultivators and farmers are still not part of data systems and they are not recognised as farmers.
- **Mimanaged land Records**:The proposition of a "farmers' database" based on digitised land records will lead to problems given the seriously flawed condition of the digitised land recordsand their failure to capture the information of actual cultivators.

Way Ahead

- It is important to bring the benefits of digital technology to farmers, but such digital infrastructure should be owned by the government, not private corporate- **Farmers' Organisations.**
- The current model is more focussed on using the government's existing databases and geared towards corporate revenue models, rather than ensuring that farmers' needs and interests are considered.
- Further steps should be taken by Government based on the public feedback on IDEA and results of pilot trials.
- Technology can provide a fillip to farmers but only when they remain at the top of this stack that the government is building.

NANO UREA LIQUID AND CONVENTIONAL UREA / *GS-III AGRICULTURE*

Context

- The Indian Farmers Fertilizer Cooperative recently, launched the world's first Nano Urea Liquid.

About

- It is a nutrient to provide nitrogen to plants as an alternative to the conventional urea.
- IFFCO Nano Urea Liquid can curtail the requirement of the same by at least 50%.
- It contains 40,000 ppm of nitrogen in a 500 ml bottle which is equivalent to the impact of nitrogen nutrient provided by one bag of conventional urea.

Significance

- The excess conventional urea causes an environmental pollution, harms soil health, and making plant more susceptible for disease & insect infestation, delayed maturity of the crop & production loss.
- Nano Urea Liquid makes the crops stronger, healthy and protects them from lodging effect.
- It will lead to reduction in Global Warming
- It will improve the quality of underground water by polluting it less.
- It will cut down post harvesting costs and increase farmers' income.

Urea

- Urea is a waste product in the body with no physiological function. It dissolves in the kidney and blood before it is excreted as urine. The organic compound of Urea has two different NH2 groups that are connected by the carbonyl functional group. Urea is non-toxic, which is why it dissolves in water. Apart from being colorless, it also has no smell.It is found in milk, blood, and sweat of mammals
- Urea was separated from urine by Hilaire Marin Rouelle, a French chemist back in 1773.
- Later in 1828, Friedrich Wohler, a German chemist, started its official preparation from Ammonium Cyanate.

Conventional Artificial Urea

- Urea is a white crystalline organic chemical compound. It is the most important nitrogenous fertiliser in the country because of its high N content (46%N).
- Urea consists of Nitrogen, Carbon, and Oxygen. **Formula:** CH_4N_2O

- Besides its use in the crops, it is used as a cattle feed supplement to replace a part of protein requirements.
- It has also numerous industrial uses notably for production of plastics.

Uses of Urea

- As fertilizers as it increases the yield of crops
- As animal feed additive.
- as a cleaner; hair removal creams and dish soaps
- in the fermentation industry
- as a refrigerant
- as pollutant neutralizer
- in textile industries
- as a fuel for rocket engines
- manufacture of synthetic fibre like rayon and nylon
- in creams/ointments
- manufacturing melamine.

Production and Import

- India is the top country by urea production in the world.
- As of 2018, urea production in India was 23.9 million tonnes that accounts for 44.42% of the world's urea production.
- The top 5 countries (others are Indonesia, the United States of America, Canada, and Viet Nam) account for 81.22% of it.
- India's import of urea rose 22 per cent to 91.23 lakh tonnes during the last fiscal year i.e 2019-2020.

Advantages of Urea Fertilizer

- Highest nitrogen content. This percentage is much higher than other available nitrogenous fertilizers in the market.
- The cost of production of urea is relatively low.
- Not subject to fire or explosion hazards, so there is no risk in the storage of urea.
- Wide application. Urea fertilizer can be used for all types of crops and soils.

Excessive use of Urea

- Using urea excessively on crops causes adverse effect on soil, crop quality and overall eco-system besides leading to pest and insect attacks.
- As with any source of nitrogen, urea itself can damage plants: nitrogen impairs or completely impedes seed germination, and too much nitrogen can give crops a "burn."

The only regulated Fertilizer

- Urea is the <u>only fertilizer at present with pricing and distribution being controlled statutorily by the Government.</u>
- The Central Govt.pays subsidy on urea to fertilizer manufacturers on the basis of cost of production at each plant and the units are required to sell the fertilizer at the government-set Maximum Retail Price (MRP).
- Thus, no one can sell urea above the MRP declared by the Govt. Under the Concession Scheme, the MRP for each fertilizer is indicative in nature.

Non-Urea Fertilizers

- The MRPs of non-urea fertilizers are decontrolled or fixed by the companies.
- The Central Govt, pays a per-tonne subsidy on these nutrients to ensure they are priced at "reasonable levels".
- Examples of non-urea fertilisers: Di-Ammonium Phosphate (DAP), Muriate of Potash (MOP).

Indian Fertilizer Industry

- The Indian fertilizer industry can broadly be divided into two categories, depending on the nutrient composition:
    (i) nitrogenous fertilizers and
    (ii) phosphatic and potassic (P&K) fertilizers.
- The overall fertilizer consumption in India has grown at a CAGR of 2.0% from 50.6 million t in FY2009 to 61.4 million t in FY2020.
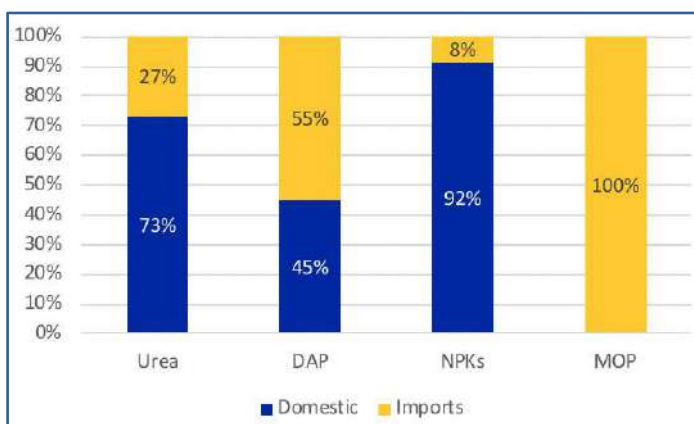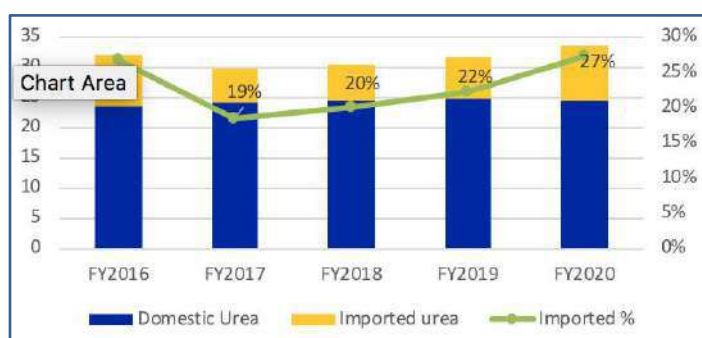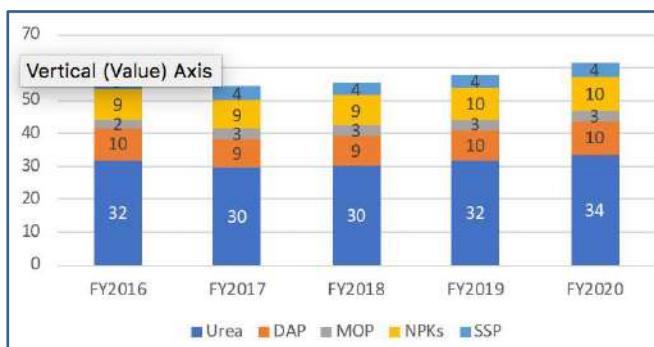
Context
- Gravitational waves revealed the first known mergers of a black hole and neutron star.
- Until now, all identified sources of gravitational waves were two of a kind: either two black holes or two neutron stars, spiraling around one another before colliding and coalescing.

Gravitational Waves
- A gravitational wave is an invisible (yet incredibly fast) ripple in space.
- Gravitational waves travel at the speed of light (186,000 miles per second).
- These waves squeeze and stretch anything in their path as they pass by.

What causes gravitational waves?
- The most powerful gravitational waves are created when objects move at very high speeds. Some examples of events that could cause a gravitational wave are:
- when a star explodes asymmetrically (called a supernova)
- when two big stars orbit each other
- when two black holes orbit each other and merge.
- But these types of objects that create gravitational waves are far away.
- And sometimes, these events only cause small, weak gravitational waves.
- The waves are then very weak by the time they reach Earth. This makes gravitational waves hard to detect.

How do we know that gravitational waves exist?
- In 2015, scientists detected gravitational waves for the very first time.
- They used a very sensitive instrument called LIGO (Laser Interferometer Gravitational-Wave Observatory).
- These first gravitational waves happened when two black holes crashed into one another.
- The collision happened 1.3 billion years ago. But, the ripples didn't make it to Earth until 2015!

How are gravitational waves detected?
- When a gravitational wave passes by Earth, it squeezes and stretches space.
- LIGO can detect this squeezing and stretching.
- Each LIGO observatory has two "arms" that are each more than 2 miles (4 kilometers) long.
- A passing gravitational wave causes the length of the arms to change slightly.
- The observatory uses lasers, mirrors, and extremely sensitive instruments to detect these tiny changes.

Neutron Stars

- Neutron stars are formed when a massive star runs out of fuel and collapses.
- The very central region of the star – the core – collapses, crushing together every proton and electron into a neutron.
- If the core of the collapsing star is between about 1 and 3 solar masses, these newly-created neutrons can stop the collapse, leaving behind a neutron star. Once formed, they no longer actively generate heat, and cool over time.
- Neutron stars are the smallest and densest currently known class of stellar objects.
- Since neutron stars began their existence as stars, they are found scattered throughout the galaxy in the same places where we find stars. And like stars, they can be found by themselves or in binary systems with a companion.
- Many neutron stars are undetectable because they simply do not emit enough radiation. A handful of neutron stars have been found sitting at the centers of supernova remnants quietly emitting X-rays.
- In binary systems, some neutron stars can be found accreting materials from their companions, emitting electromagnetic radiation powered by the gravitational energy of the accreting material.
- The two general classes of non-quiet neutron stars are – pulsars and magnetars.

BLACK CARBON

GS-III   SCIENCE & TECHNOLOGY

Context

- Black Carbon has a significant adverse effect on human health and leads to premature mortality, says a new study by Department of Science and Technology.

Findings

- **Indo-Gangetic Plain, experiences very high aerosol loading and trace gas concentrations throughout the year** due to prevalence of a subsidence zone (sudden sinking of the Earth's surface).
- The region observed decadal increasing trends both in Aerosol Optical Depth and Black Carbon aerosols.
- From 2009 to 2016, correlation between daily all-cause mortality and ambient air quality establish that there is a clear impact of BC aerosols, NO_2 and, $PM2.5$ exposure.
- The effect of pollutants was **more prominent for males,** age group 5-44 and, in winter.
- The adverse effect of air pollutants was not limited to current day of exposure but can extend as high as up to 5 days (Lag effect).
- Mortality rises linearly with an increase in air pollutants level.

Significance of the study

- The study could help in the estimation of future burden of mortality associated with air pollutants more accurately.
- Inclusion of Black Carbon as a potential health hazard provides a background for more such studies of effects of air pollutants on health.
- This will help government and policy-makers for better planning to mitigate the adversity associated with changing climate-air pollution-health nexus.

Aerosol

- An aerosol is a **suspension of fine solid particles or liquid droplets in air or another gas.**
- Aerosols can be natural or anthropogenic.
- Examples of natural aerosols are fog or mist, dust, forest exudates and geyser steam.
- Examples of anthropogenic aerosols are particulate air pollutants and smoke.

Black Carbon

- Chemically, black carbon (BC) is a component of fine particulate matter (PM ≤ 2.5 μm).
- It is formed through the **incomplete combustion of fossil fuels, biofuel, and biomass.**
- Black carbon is a climate forcing agent contributing to global warming.
- It warms the Earth by absorbing sunlight and heating the atmosphere and by **reducing albedo** when deposited on snow and ice (direct effects) and indirectly by interaction with clouds.
- Black carbon stays in the atmosphere **for only several days to weeks**
- The IPCC have posited that reducing black carbon is one of the easiest ways **to slow down short term global warming.**

Aerosol Optical Depth

- Aerosol Optical Depth (AOD) is the measure of aerosols (e.g., urban haze, smoke. particles, desert dust, sea salt) distributed within a column of air from the Earth's surface to the top of the atmosphere.

WHITE DWARF

GS-III SCIENCE & TECHNOLOGY

Context

- Only a smidge bigger than the moon, a newfound white dwarf is the smallest of its kind known.

About

- A white dwarf is what stars like the Sun become after they have exhausted their nuclear fuel.
- Near the end of its nuclear burning stage, this type of star expels most of its outer material, creating a planetary nebula and only the hot core of the star remains.
- This core becomes a very hot white dwarf, with a temperature exceeding 100,000 Kelvin.
- The white dwarf then cools down over the next billion years or so.
- A typical white dwarf is half as massive as the Sun, yet only slightly bigger than Earth.
- A white dwarf is 200,000 times as dense as earth and it is one of the densest collections of matter, surpassed only by neutron stars.

Composition

- Usually, white dwarfs are composed of carbon and oxygen (CO white dwarf).
- Neon Magnesium Helium white dwarf may also form.

Life Cycle of a Star
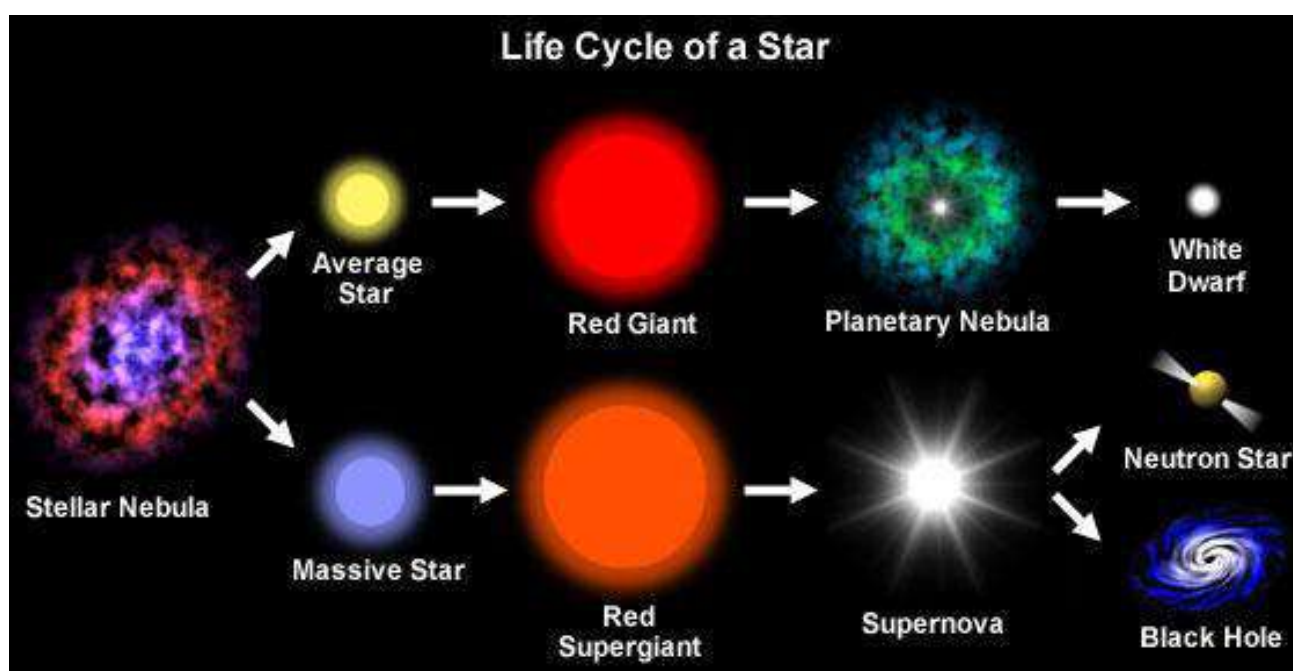
ENVISION MISSION

GS-III SCIENCE & TECHNOLOGY

Context

- The European Space Agency (ESA) announced that it has selected EnVision as its next orbiter that will visit Venus sometime in the 2030s.

The mission

- EnVision is an ESA led mission with contributions from NASA. It is likely to be launched sometime in the 2030s.
- Once launched on an Ariane 6 rocket, the spacecraft will take about 15 months to reach Venus.
- The spacecraft will carry a range of instruments to study the planet's atmosphere and surface, monitor trace gases in the atmosphere and analyse its surface composition.
- A radar provided by NASA will help to image and map the surface.

Questions that the Mission seeks to get answers to

- How Earth and Venus evolved so differently from each other considering that they are roughly of the same size and composition.
- Is Venus still geologically active?
- Could it have once hosted an ocean and even sustained life?
- What lessons can be learned about the evolution of terrestrial planets in general, as we discover more Earth-like exoplanets?

About Venus

- For those on Earth, Venus is the second-brightest object in the sky after the moon.
- It appears bright because of its thick cloud cover that reflects and scatters light.
- Venus, which is the second closest planet to the Sun, is called the Earth's twin because of their similar sizes.
- The planet's thick atmosphere traps heat and is the reason that it is the hottest planet in the solar system, despite coming after Mercury, the closest planet to the Sun.
- Surface temperatures on Venus can go up to 471 degrees Celsius, which is hot enough to melt lead.
- Further, Venus moves forward on its orbit around the Sun but spins backwards around its axis slowly.
- This means on Venus the Sun rises in the west and sets in the East.
- One day on Venus is equivalent to 243 Earth days because of its backward spinning, opposite to that of the Earth's and most other planets.
- Venus also does not have a moon and no rings.

Previous Missions

- Because of the planet's harsh environment, no humans have visited it and even the spacecraft that have been sent to the planet have not survived for a very long time.
- So far, spacecraft from several nations have visited the planet.
- The first such spacecraft was the Soviet Union's Venera series (the spacecraft, however, could not survive for long because of the planet's harsh conditions), followed by NASA's Magellan Mission that studied Venus from 1990-1994.
- As of now, Japan's Akatsuki mission is studying the planet from Orbit.

Future Missions

- DAVINCI+ and VERITAS are part of NASA's Discovery Program, which began in 1992.
- The two selections are a part of the ninth Discovery Program and were made from proposals submitted in 2019.

DAVINCI+

- DAVINCI+ is short for 'Deep Atmosphere Venus Investigation of Noble gases, Chemistry, and Imaging' and is the first US-led mission to the planet's atmosphere since 1978.
- It will try to understand Venus' composition to see how the planet formed and evolved.
- It will pass through the planet's thick atmosphere and make observations and take measurements of noble gases and other elements.
- It will also try to return the first high resolution photographs of a geological feature that is unique to Venus.
- This feature, which is called "tesserae" may be comparable to Earth's continents.
- The presence of tesseraes may suggest that Venus has tectonic plates like Earth.

Veritas

- VERITAS is short for 'Venus Emissivity, Radio Science, InSAR, Topography, and Spectroscopy' .
- It will map the planet's surface to determine its geologic history and understand the reasons why it developed so differently from Earth.

PASIPHAE SURVEY / **GS-III   SCIENCE & TECHNOLOGY**

Context

- An ambitious sky-survey project named as Pasiphae is set to peep into the unknown regions of the sky.

About Pasiphae

- Polar-Areas Stellar-Imaging in **Polarization High-Accuracy Experiment (PASIPHAE)** is an international collaborative sky surveying project.
- **Aim:** To study the polarization in the light coming from millions of stars.

A light wave that is vibrating in more than one plane is referred to as unpolarized light. Polarized light waves are light waves in which the vibrations occur in a single plane. A polarimeter is an optical instrument with which one can accurately measure the angle by which the polarization of light is rotated.
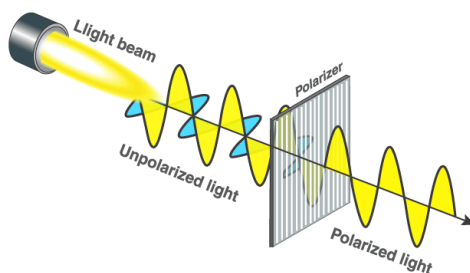
- The survey will use two high-tech optical polarimeters to observe the northern and southern skies, simultaneously.
- It will focus on capturing starlight polarization of very faint stars that are so far away that polarization signals from there have not been systematically studied yet.
- The distances to these stars will be obtained from measurements of the GAIA satellite.

Global Astrometric Interferometer For Astrophysics (GAIA) is a space observatory of the European Space Agency (ESA), launched in 2013. The spacecraft is designed for astrometry: measuring the positions, distances and motions of stars with unprecedented precision. The mission aims to construct by far the largest and most precise 3D space catalog ever made, totaling approximately 1 billion astronomical objects, mainly stars, but also planets, comets, asteroids and quasars, among others.

- By combining these data, astronomers will perform a maiden magnetic field tomography mapping of the interstellar medium of very large areas of the sky using a novel polarimeter instrument known as **WALOP (Wide Area Linear Optical Polarimeter).**
  - ✓ Interstellar medium (ISM) is the matter and radiation that exist in the space between the star systems in a galaxy.
  - ✓ Tomography is the representation of a cross section of solid object using X-rays.

Why is PASIPHAE important?

- Since its birth about 14 billion years ago, the universe has been constantly expanding, as evidenced by the presence of **Cosmic Microwave Background (CMB) radiation which fills the universe.**

> The Cosmic Microwave Background (CMB) is the cooled remnant of the first light that could ever travel freely throughout the Universe. This 'fossil' radiation, the furthest that any telescope can see, was released soon after the 'Big Bang'. Scientists consider it as an echo or 'shockwave' of the Big Bang.

- Immediately after its birth, the universe went through a short inflationary phase during which it expanded at a very high rate, before it slowed down and reached the current rate.
- However, so far, there have only been theories and indirect evidence of inflation associated with the early universe.
- **Consequence of the inflationary phase -** A tiny fraction of the CMB radiation has its imprints in the form of a specific kind of polarization (known scientifically as B-mode signal).
- All previous attempts to detect this signal met with failure mainly due to the difficulty posed by our galaxy, the Milky Way, which emits copious amounts of polarized radiation.
- Besides, it contains a lot of dust clouds that are present in the form of clusters.
- When starlight passes through these dust clouds, they get scattered and polarised.
- In a nutshell, the galactic emission is so bright that the polarisation signal of CMB radiation is lost.

The role of Pasiphae

- The PASIPHAE survey will measure starlight polarisation over large areas of the sky.
- This data along with GAIA distances to the stars will help create a 3-Dimensional model of the distribution of the dust and magnetic field structure of the galaxy.
- Such data can help remove the galactic polarised foreground light and enable astronomers to look for the elusive B-mode signal.

What is WALOP?

- It is an instrument, when mounted on two small optical telescopes, will be used to detect polarised light signals emerging from the stars along high galactic latitudes.

Previous Robopol Experiment

- RoboPol experiment survey during 2012-2017 was the predecessor of WALOPand it has a much smaller field of view in the sky.
- But both WALOP and its predecessor RoboPol share the single shot photometry principle.

> Photometry, in astronomy, is the measurement of the brightness of stars and other celestial objects (nebulae, galaxies, planets, etc.). Such measurements can yield large amounts of information on the objects' structure, temperature, distance, age, etc.

Watch this video for better understanding: https://youtu.be/OQVXNSmgQ3E

NEW SHEPHARD ROCKET SYSTEM

GS-III SCIENCE & TECHNOLOGY

Context

- Recently, Jeff Bezos's space company called Blue Origin concluded the online auction for the first seat on New Shephard, a rocket system meant to take tourists to space.

What is New Shephard?

- 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.
- Essentially, it is a rocket system that has been designed to take astronauts and research payloads past the Karman line – the **internationally recognized boundary of space.**
- The idea is 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 Shephard will also allow space tourists to experience microgravity by taking them 100 km above the Earth.

How does it work?

- The rocket system consists of two parts, the cabin or capsule and the rocket or the booster.
- The capsule is fully autonomous and does not require a pilot.
- The system is a fully reusable, vertical takeoff and vertical landing space vehicle that accelerates for about 2.5 minutes before the engine cuts off.
- After separating from the booster, the capsule free falls in space lands back with the help of parachutes, while the booster performs an autonomously controlled vertical landing back to Earth.

The Pros and Cons of Space Tourism
Cons

- **Exposure to Sun's Radiation:** Space travel technology at the nascent stage can make entering space a dangerous venture. Space travelers are likely to get exposed to harmful radiations from the sun.
- **Health:** Spending long hours in zero gravity condition can be dangerous for the person's cardiovascular and musculoskeletal system. If people accidentally get exposed to high-energy ionizing cosmic rays, it may lead to cancer.
- **Exposure to harmful organisms:** We may unwittingly introduce some harmful microorganism from space into the atmosphere of Earth.
- **Poor Regulation:** Lack of proper regulation and inadequate safety protocols can make space travel extremely dangerous.
- **Commercialization:** Companies engaged in this form of travel may fail to stick to safety measures in a spree to gather more customers.
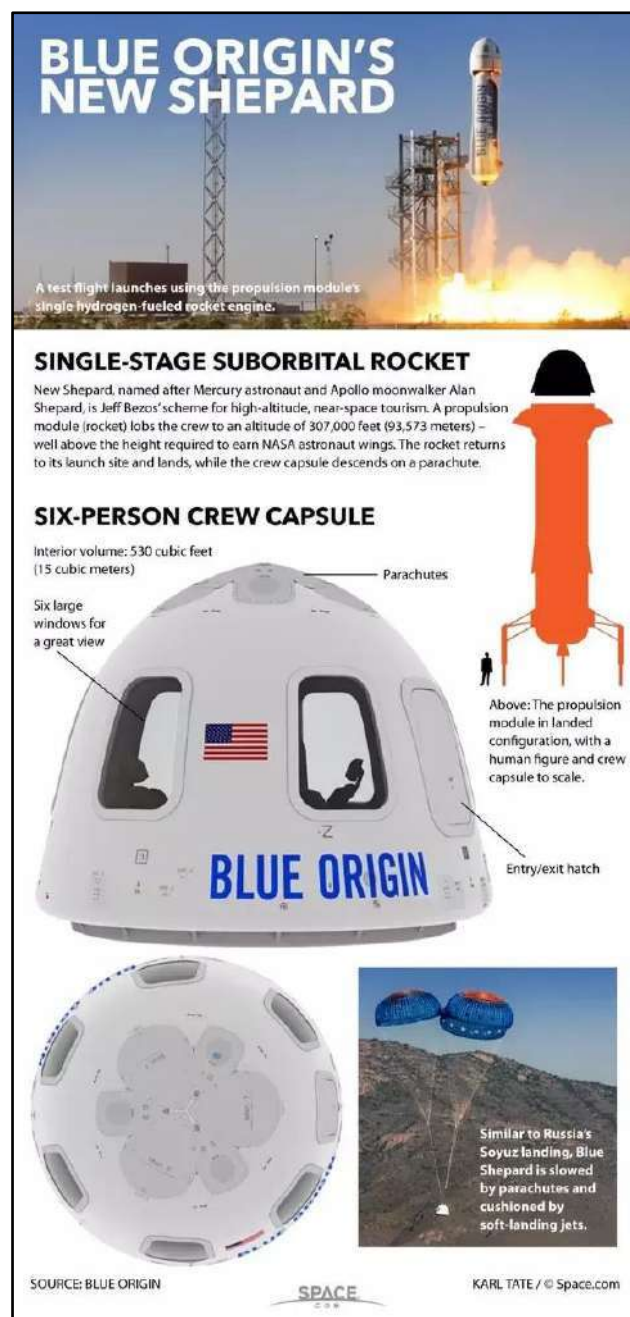
- **Waste of Resources:** Experimentation and unsuccessful ventures may cause an <u>unnecessary waste of resources.</u>
- Developing space programs and spacecrafts need a lot of money. That money can be utilized for alleviation of poverty.
- **Inequity:** Space tourism is <u>meant for the super rich only</u>. For example, a single 2 ½ hour flight ticket in Virgin Galactic's upcoming space ship costs $ 250,000.
- **Not environment friendly:** Several natural resources are wasted in flying the fuel guzzling rockets. It pollutes the atmosphere as well. Thus, space program <u>is bad for our environment.</u>
- **Not a panacea**: It is great to imagine people walking on the surface of Mars. It would not be wise to consider the escape to space will help in escaping the problems of earth. There is nowhere in the solar system where we can find the environment as congenial as that available on earth.

Pros

- **Boost to economy:** Space tourism <u>will increase the commercial activity</u> in the time of poor state of world economy.
- **Generate Employment:** Space tourism will give <u>employment to thousands of people</u>. Manufacturing of new and better spacecraft will give employment to many skilled people.
- **Draw Investors:** It will renew interest in space exploration. This will draw more investors for more financial backing to <u>support more innovations in the industry.</u>
- **Pave ways to protect Earth:** It would also <u>help in identifying potential hazards dangerous for our planet.</u>
- **Technological advancement:** <u>Opens avenues for advanced technology</u> which can be applied to other domains apart from space missions.
- **New resources:** Help to <u>find new minerals and other precious materials in space</u> and other planets. This will be of great help to the people of Earth where natural resources are depleting fast.
- **Adventure Tourism:** Open a <u>new avenue for adventure tourists.</u>

Final Words

- Once space tourism does become mainstream, it will also positively impact many socioeconomic factors on Earth: creating jobs, educating citizens about space and fostering a new solar-based energy infrastructure.
- The sweet escape to the stars can eventually awaken us to the awe-inspiring potential of space exploration while also giving us a better appreciation of home.

- The Kármán line is an attempt to define a <u>boundary between Earth's atmosphere and outer space.</u>

- The Fédération Aéronautique Internationale (FAI), an international standard-setting and record-keeping body for aeronautics and astronautics, defines the Kármán line as the <u>altitude of 100 kilometres above Earth's mean sea level.</u> **Not all organizations recognize this definition.** The US Air Force and NASA define the boundary as 50 miles (80 km) above sea level. The line is approximately at the turbopause, above which atmospheric gases are not well-mixed. **International law does not define the edge of space, or the limit of national airspace.**

THE EARTH'S ATMOSPHERE

EXOSPHERE
EXOBASE
THERMOSPHERE
KARMAN LINE
MESOSPHERE
STRATOSPHERE
OZON LAYER
TROPOSPHERE
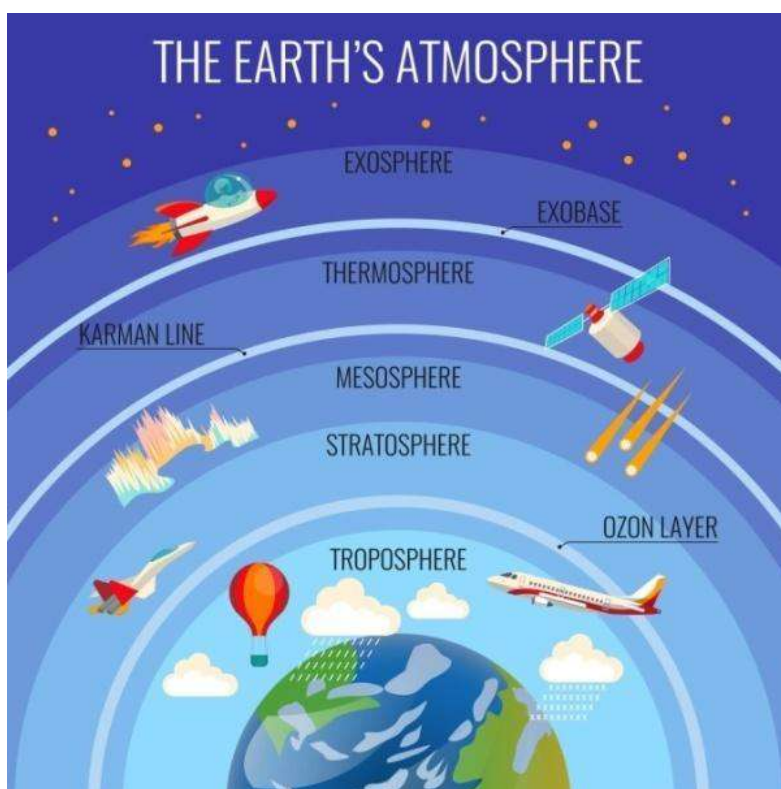
| UNESCO SCIENCE REPORT | GS-III SCIENCE & TECHNOLOGY |

Context
- Latest edition of UNESCO Science Report was published.
- Title: **'The race against time for smarter development'.**
- This year the report focuses on the need to develop countries of all income levels, prioritizing their transition to digital and 'green' economies.

About
- The UNESCO Science Report (USR) is a flagship publication of UNESCO and is published <u>once every five years</u>.
- The <u>first report</u> in this series was <u>published in 1993</u> by the name of World Science Report.
- It is an oft-cited report on science, technology and innovation (STI). Every edition has a chapter on India.
- The chapter provides an overview of STI developments in India, with suggestions and recommendations.

Highlights and Suggestions
- **Stagnant Gross Domestic Expenditure on Research (GERD):**
  - It is at 0.7% of the GDP for years. In absolute terms, research expenditure has increased though. India has <u>one of the lowest GERD/GDP ratios among the BRICS nations.</u>
- **Research Intensity:**
  - India's **research intensity has been declining since 2014.** R&D <u>in the government sector has been in steady decline since 2015</u>. The share of private business enterprises in it has shot up to 42%. Number of researcher in India, has increased from 157 million in 2011 to 216 million in 2015.
- **Finance and IP:**
  - Level of domestic investment in R&D is inadequate. India needs to find new ways to finance research projects and to amend existing IP rules to do away with compulsory licenses on vaccines and drugs.
- **Technology:**
  - <u>India has not adopted industry 4.0 technologies</u> and job losses due to automation are not a serious threat now.
  - Non-availability of well-trained scientists and engineers is a constraint in percolation of technologies. For enhancing technology, spillovers and valorisation of research, linkage between laboratories and manufacturers must be enhanced. For future competitiveness of Indian industry, a pool of technologies related to Fourth Industrial Revolution is essential.
- **Renewable Energy:**
  - Only a few Indian states have made progress on meeting renewable energy targets. The Report suggests for incentives to promote use of electric and hybrid vehicles.
- **Employment:**
  - Job opportunities for science, technology, engineering & medicine (STEM) graduates have not increased.
  - However, <u>employability of STEM graduates has increased to 49% in 2019 from 34% in 2014</u>. It is serious issue because <u>every other graduate is unemployable.</u>
- **Research Publications:**
  - Indian researchers are publishing between **1.5 and 1.8 times the global average** on smart-grid technologies, photovoltaics, biofuels and biomass and wind turbine technologies, complementing the government's push to expand green energy sources. There is an <u>increase in scientific publications by Indian researchers on cutting-edge technologies.</u>
- **Policies:**
  - <u>There is a 'silo approach' in policy making</u>. It's important to establish a single institution to facilitate coordination in innovation policies.
- **Some promising initiatives:**

o Atal Innovation Mission, the Prime Minister's Research Fellows scheme; The 'Impacting Research Innovation and Technology' fund etc. The proposed <u>National Research Foundation</u> can be a big boost for academic research.

NEUTRINOS

GS-III SCIENCE & TECHNOLOGY

Context
- Scientists have shown that the geometry of space-time can cause neutrinos to oscillate.

Neutrino: a fundamental particle of weak interaction
- A neutrino is <u>a sub-atomic particle</u> that is very similar to an electron, but <u>has no electrical charge.</u>
- They are subject to weak force. Thus, the gravitational interaction is extremely weak, and neutrinos do not participate in the strong interaction.
- Neutrinos typically pass through normal matter unimpeded and undetected.
- About 100 trillion neutrinos pass through our bodies every second!
- The neutrino has a **very little mass, a zero charge and a spin ½.**
- Neutrinos were <u>first detected in 1959</u> and they are the <u>second most abundant particle</u> in the world after Photon.

Sources of Neutrinos
- Neutrinos are created by various radioactive decays; the following list is not exhaustive, but includes some of those processes:
- beta decay of atomic nuclei or hadrons,
- natural nuclear reactions such as those that take place in the core of a star
- artificial nuclear reactions in nuclear reactors, nuclear bombs, or particle accelerators
- during a supernova
- during the spin-down of a neutron star
- when cosmic rays or accelerated particle beams strike atoms.

Detection
- A neutrino is able to react with an atom of gallium-71, converting it into an atom of the unstable isotope germanium-71.
- The germanium is then chemically extracted and concentrated.
- Neutrinos were thus detected by measuring the radioactive decay of germanium.

India-based Neutrino Observatory
- In Theni district in Tamil Nadu, the India-based Neutrino Observatory is proposed to be set up.
- It is a particle physics research project under construction to primarily study atmospheric neutrinos in a 1,200 meters (3,900 ft) deep cave under a mountain.
- The main experiment proposed at INO is the **Iron-Calorimeter Detector.**

Why does INO need the mountain?
- The mountain consists of 1km of solid rock that filters away most of the charged particles from the cosmic rays.
- The filtered set consists of a part of the incident cosmic ray protons and practically all the neutrinos.

Why does the experiment have to be underground?
- If the detector was placed at the surface of the mountain, it would pick up billions of cosmic ray muons every hour and about 10 neutrino events per day.
- After placing inside the rock, it would detect only 300 muon events per hour and about 10 neutrino events per day of which 3 will be the desired muon neutrino events.

DELTA PLUS VARIANT

Introduction

- The Delta variant of SARS-CoV-2, also known as B.1.617.3 strain, has been pinned as the primary driver of the devastating second wave of the COVID-19 pandemic in India.

Delta plus variant resistant to monoclonal antibody treatment

- Mutation in the Delta variant of SARS-CoV-2 was resisting the monoclonal antibody treatment for COVID-19.
- K417N is particularly resistant to monoclonal antibodies Casirivimab and Imdevimab.

What are monoclonal antibodies?

- To fight a viral infection, our bodies create proteins known as antibodies.
- Monoclonal antibodies are artificial antibodies that mimic the activity of our immune systems.
- They are produced through a process that involves extracting specific antibodies from human blood and then cloning them.
- These monoclonal antibodies are designed to target a virus or a specific part of one — for instance, **REGEN-COV2 is a cocktail of two monoclonal antibodies developed to target the SARS-CoV-2 spike protein.**
- The monoclonal antibodies bind to specific parts of the spike protein, blocking its ability to infect healthy cells.
- Besides Covid-19, monoclonal antibodies have been used in the treatment of cancers as well as Ebola and HIV.

Monoclonal Antibodies Vs Convalescent Plasma Therapy

- Convalescent plasma therapy involves providing antibodies from a recovered Covid-19 patient's plasma.
- Monoclonal antibodies are when we take a specific antibody and mass-manufacture it in a factory. For antibody cocktails, we provide a combination of two or more such antibodies.
- Monoclonal antibodies are "extremely pure" due to their homogenous nature.
- India recently dropped the use of convalescent plasma as an "off-label" option from its guidance on Covid-19 treatment.

WHAT IS CONVALESCENT PLASMA THERAPY?
It involves transfusing plasma retrieved from the blood of people who have recovered from Covid-19 into people suffering from the disease

How does it work?
As people fight the Covid-19 virus, they produce antibodies that attack the virus. These antibodies are secreted by immune cells known as B lymphocytes, found in plasma or liquid part of blood, which helps the blood clot when needed and supports immunity

Covid-19 patient — Recovered — Covid-19 patient

Once a person has recovered, he or she develops antibodies that will stay in the blood waiting to fight the virus should it return

Blood with antibodies
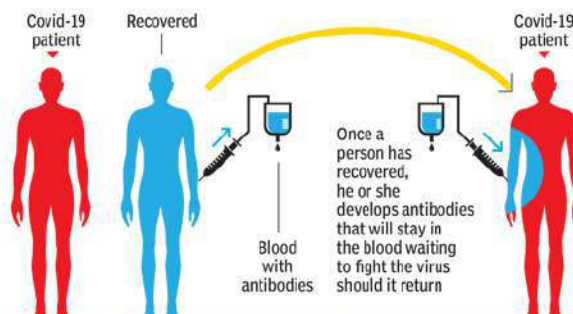
How many patients can be treated with plasma from a donor?
One person's donation of plasma can help two people. Scientists say that a patient needs only one transfusion to get enough antibodies to fight the virus

Is it a new treatment?
No, it isn't. The idea of using one person's plasma to help another has been used during the outbreak of SARS, also caused by a coronavirus

How many states in India are using it?
None. Delhi, Maharashtra, Kerala and Gujarat, among others, have sought approval from the regulatory bodies for clinical trials

TOI FOR MORE INFOGRAPHICS DOWNLOAD TIMES OF INDIA APP

Plasma is the liquid portion of blood. About 55% of our blood is plasma, and the remaining 45% are red blood cells, white blood cells and platelets that are suspended in the plasma. When separated from the rest of the blood, plasma is a light yellow liquid. Plasma carries water, salts and enzymes. The main role of plasma is to take nutrients, hormones, and proteins to the parts of the body that need it. Cells also put their waste products into the plasma.

Context

- Recently, the world's first genetically modified (GM) rubber plant was planted on the outskirts of Guwahati, Assam.

About

- Genetically modified crops (GM crops) are plants used in agriculture, the DNA of which has been modified using genetic engineering methods.
- GM crops were first introduced in the U.S. in the mid-1990s.

The debate around GM Crops

Merits

Reduced input burden

- Since genetically modified crops require minimal pesticides, fertilizers or insecticides the cost of input is greatly reduced.

Disease resistant and Sustainability

- Through genetic modifications the genetically modified crops are made resistant to diseases. This enhances their sustainability and yield.

Environmental Protection

- According to an Oklahoma State University report, the increase of GM animals and crops often requires less time, tools and chemicals, and may help with reducing greenhouse gas emissions, soil erosion and environmental pollution.

Longer Shelf life

- Genetically modified foods have a longer shelf life. This enhances the ease of transportation and storage.

Affordability

- Due to reduced burden of inputs and longer shelf life hence reduced wastages, the prices of the output will be low.
- This increases the affordability.

Fortification

- According to the Food and Agricultural Organization of the United Nations, some GM foods have been engineered to become more nutritious in terms of vitamin or mineral content.
- This not only helps people get the nutrients they need, but also plays a significant role in fighting against malnutrition in third-world countries.

Decreased Use of Pesticides

- It has been proven that genetically modified crops do not need pesticides to become stronger against various types of insects or pests that may destroy them.

Demerits

Gene Transfer

- A constant risk of genetically modified foods is that an organism's modified genes may escape into the wild.
- Experts warn that genes from commercial crops that are resistant to herbicides may cross into the wild weed population, thus creating super-weeds that have become impossible to kill.

Antibiotic resistance

- Genetically modified crops have inbuilt antibiotic properties due to their inbuilt mechanisms for disease control.
- This can result in superbugs which can disrupt the health care sector.

Carcinogen exposure risk

- There are researches which show that crops tolerant to commercial pesticides greatly increase the risk of cancer development in rats.

- Genetically modified crops can also pose serious threats to human health.

Lower Level of Biodiversity

- When we remove a certain pest that is harmful to crops, we could also be removing a food source for a certain species.
- In addition, genetically modified crops could prove toxic to some organisms, which can lead to their reduced numbers or even extinction.

Gene Spilling

- It is unclear what effects, if there are any, the genetic pollution resulting from inadequate sequestering of genetically modified crop populations would have on the wild varieties surrounding them.

Exploitation

- Some countries may use genetic engineering of foods as a very powerful weapon against their enemies.

Widening Gap of Corporate Sizes

- This disadvantage can possibly happen between food-producing giants and their smaller counterparts.
- Larger companies might have more political power and might be able to influence safety and health standards.

New Diseases

- As previously mentioned, genetically modified foods can create new diseases.

Economic Concerns

- Consumer advocates are worried that this will raise seed prices to very high levels that third-world countries and small farmers cannot afford them, thus widening the gap between the rich and the poor.

Case Studies

Monsanto's INGARD cotton

- Monsanto sold its INGARD cotton (also known as Bt cotton) to Australian growers with estimates that there would be a 90% drop in sprays. In fact, for the 1996-97 crops there was a 52% decrease.
- However, Australian farmers generally found themselves worse off financially than they thought they would. Some had to spray just as much as usual, yields were variable and costs higher. More insects survived than had been intended by the developer.

Mannion and Morse report

- On a global level, from 1996 to 2006, GM crops increased farm income by $40.7 billion, occurring in both developed (47%) and developing agricultures (53%). There has been a global yield increase of 377 million tons from 1996 to 2012.

In a nutshell,

✅ Benefits of GMOs	❌ Risks of GMOs
Nutritional value of foods could be improved (e.g. by introducing proteins, vitamins or vaccines)	New traits could cause adverse health reactions (e.g. new proteins may cause allergic responses)
Crops can be produced that lack known allergens	Removal of traits could have unknown effects
Crops can grow in arid conditions for better yield (e.g. by introducing drought resistant genes)	Crops may limit biodiversity of local environment (increased competition with native species)
GM crops can produce herbicides to kill pests	Cross pollination could lead to 'super weeds'
Improve food supply / agriculture in poor countries (GM crops can be engineered for improved yields)	Patents restrict farmers from accessing GM seeds (biotech companies hold monopolies over crop use)
GM crops may have longer shelf lives (less spoil)	Foods with GM components may not be labeled
Reduces economic costs and carbon footprint – less need for land clearing and pesticide usage	Different governments may have conflicting regulatory standards concerning safe usage

The Case of India

- India allows the import of GM soybean and canola oil.
- The only crops approved for cultivation are (bt) cotton.
- India has had an effective ban on other GM seeds for a considerable time.

Note: In India, the Genetic Engineering Appraisal Committee (GEAC) under of Ministry of Environment, Forest and Climate Change is the apex body that allows for commercial release of GM crops

Conclusion

- Genetically modified foods can potentially solve many hunger and malnutrition problems in the world, as well as help protect and preserve the environment by increasing yields and reducing reliance upon chemical pesticides and herbicides.
- However, it is important to proceed with caution to avoid unfavorable consequences for the surroundings and our health, considering that genetic engineering technology is very powerful.

CHINA'S 'ARTIFICIAL SUN' — *GS-III SCIENCE & TECHNOLOGY*

Context

- **China's Experimental Advanced Superconducting Tokamak (EAST),** which mimics the energy generation process of the sun, set a new record after it ran at 216 million degrees Fahrenheit (120 million degrees Celsius) for 101 seconds.
- For another 20 seconds, the "artificial sun" also achieved a peak temperature of 288 million degrees Fahrenheit (160 million degrees Celsius), which is over ten times hotter than the sun.

What is China's 'artificial sun' EAST?

- The Experimental Advanced Superconducting Tokamak (EAST) reactor is an <u>advanced nuclear fusion experimental research device</u>.
- The **purpose of the artificial sun is to replicate the process of nuclear fusion,** which is the same reaction that powers the sun.

> Apart from the EAST, China is currently operating the HL-2A reactor as well as J-TEXT. In December 2020, HL-2M Tokamak, China's largest and most advanced nuclear fusion experimental research device, was successfully powered up for the first time.

- EAST first became operational in 2006. The EAST project is **part of the International Thermonuclear Experimental Reactor (ITER) facility,** which will become the world's largest nuclear fusion reactor when it becomes operational in 2035.
- ITER project includes the contributions of several countries, **including India**, South Korea, Japan, Russia and the United States.

How does the 'artificial sun' EAST work?

- The EAST Tokamak device is designed to replicate the nuclear fusion process carried out by the sun and stars.

Nuclear Fission	Nuclear Fusion
A heavy nucleus breaks up to form two lighter ones.	Two nuclei combine to form a heavier nucleus.
It involves a chain reaction, which can lead to dangerous meltdowns.	There is no chain reaction involved.
The heavy nucleus is bombarded with neutrons.	Light nuclei have to be heated to extremely high temperature.
There is established, decades-old technology to	Scientists are still working on a controlled

control fission.
- ▪ Nuclear waste, a byproduct of fission, is <u>an environmental challenge.</u>
- ▪ Raw material like plutonium or uranium is scarce and costly.

fusion reactor that offers more energy than it consumes.
- ▪ There is no nuclear waste.
- ▪ Raw materials are very easily sourced.
- ▪ Fusion reactions have energy densities many times greater than nuclear fission.

Significance
- The sun's core only reaches about 15 million degrees Celsius, which means the reactor was able to touch temperatures that are 10 times hotter than that.
- Once mastered, nuclear fusion could potentially provide unlimited clean energy and very low costs.

Note: In 2020, South Korea's KSTAR reactor set a new record by maintaining a plasma temperature of over 100 million degrees Celsius for 20 seconds.

EMBRYO SELECTION WITH POLYGENIC SCORES / *GS-III SCIENCE & TECHNOLOGY*

Context
- A special report published in the New England Journal of Medicine raises serious questions about the benefits, risks and ethics of a new service offered by companies called ESPS or **"embryo selection based on polygenic scores."**

What is ESPS?
- ESPS allows in vitro fertilization patients to select embryos with the goal of choosing healthier and even smarter children.
- Polygenic scores are a "<u>weighted average of the contributions of all of the genes we have information on in the genome,</u> to try to predict whether one person has a higher or lower rate of a disease or some trait."
- Thus, parents are tempted to use polygenic scores to pick embryos predicted to have specific traits they treasure, hoping to produce kids who are taller, smarter, or less likely to develop cancer or heart disease.

Benefits
- **<u>Improved embryo selection:</u>**
  - o It allows parents to give the child genes that they do not carry. Individuals 'tailor-made' to show desirable characteristics.
  - o In a nutshell, ESPS is the drive to create the population of perfect people.
- **<u>Prevents Diseases</u>**:
  - o Prevent genetic transmission of unknown chromosomal abnormalities and diseases like Alzheimer's, Huntington 's disease, Down Syndrome, Spinal Muscular Atrophy. Hereditary conditions such as anemia, obesity, diabetes, cancer, and much more. Eliminates the occurrence of known diseases in future generations. It helps to eliminate mitochondrial disorders.
- **<u>Optimized chance of a successful pregnancy:</u>**
  - o Reduce abortion rate due to embryo carry one or more genetic abnormalities. Reduced level of uncertainty in patients, a lower risk of pregnancy loss, future miscarriages and less emotional stress

- **Reduced monetary burden:**
  - Since it gives the insight into which embryos are worth transferring and freezing.
- **Sex determination for the good:**
  - Can be used to determine the sex of a child and prevent selecting the embryo with a sex-linked genetic mutation.
  - It allows parents to give their child a healthy life.
- **Ethical in nature:**
  - Taking folate during pregnancy will reduce the risk of a child developing autism. It is an example of medically altering a child and it is considered ethically acceptable.
- **Increased Lifespan:**
  - It can increase human lifespan for up to 30 years.
- **Right to Genetic Determinism:**
  - Parents can set their own limits for genetically engineering their baby.
  - The government does not have the right to control means of reproduction.
- **Advancing Genetics:**
  - Provides a better understanding of genetics for biologists and medical professionals.
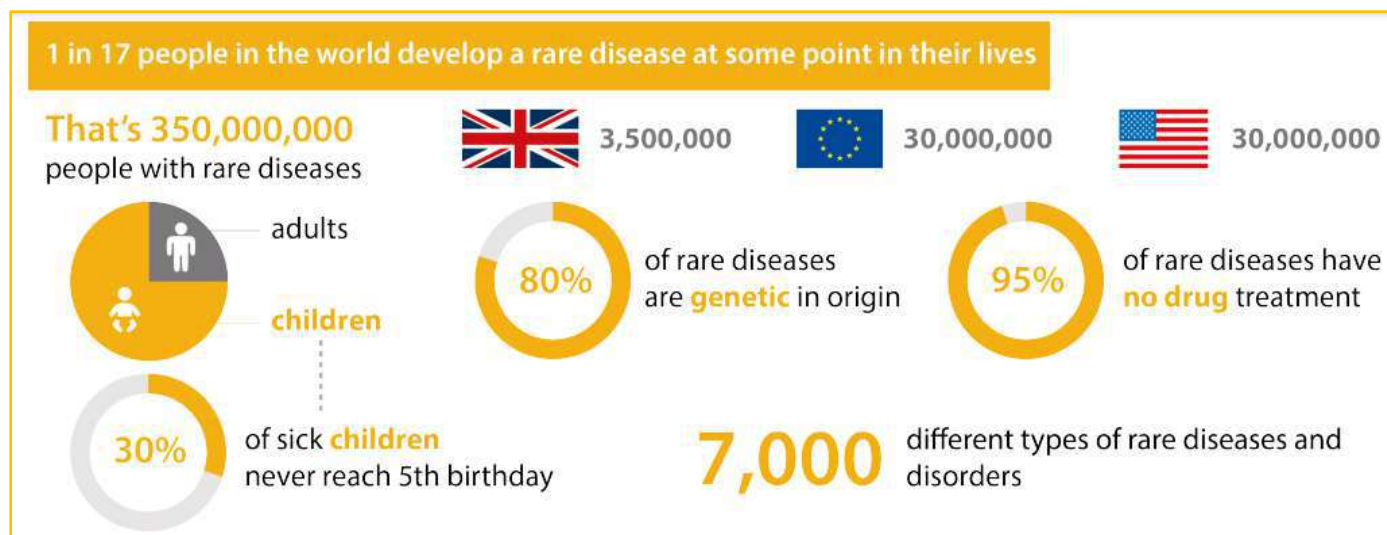
Concerns associated with ESPS

- **Ethical Dilemma:**
  - Discarding embryos that are deemed less fit than others is sometimes viewed as taking a human life. People with disabilities may experience devaluation.
  - "The more control people have over the ability to design their children, the bigger the moral questions that raises - up to and including, who decides what constitutes a genetic problem that needs to be 'fixed'?"
  - Healthy but "different" individuals may be selected aborted, contributing to the potential for a super class!
  - The use of genetic manipulation has led some parents to conceive children who will be genetic matches for ill siblings, known as "savior siblings," for the express purpose of acting as donors for their siblings.
- **Against Children's Rights:**
  - A baby cannot consent to have its body altered; it's right as parents do not "own" their children. It takes away from the child's individual personality.
- **Demographics:**
  - ESPS has the potential to alter population demographics. Might lead to overpopulation as well.
- **Inequality:**
  - It can exacerbate socioeconomic inequalities and devalue certain traits. ESPS is largely only accessible to the relatively wealthy. It would create a world of haves and have nots.

- **Long-term implications:**
  - There are broader concerns about the long term effects of embedding inequities in our genes. The technology used is <u>not 100% safe yet</u>. It is only in the experimental stages at this point. It may remove certain genes that could have been good for the baby's overall development and growth.

- **Prone to error:**
  - Genetic engineers are not perfect people and cannot 100% properly evaluate every gene. They are more than likely mistakes will be made.

- **Not a panacea:**
  - Many things aren't controlled by genetics. There are many environmental and lifestyle factors to consider, in addition to genetics. It's not possible to make happy/healthy humans just with genetic engineering.

- **Disrupt human evolution:**
  - As off now human beings are evolved on the basis of natural selection. Designer babies will bring an irreversible change in human evolution.

- **Reduce diversity:**
  - If everyone wants to have a certain trait, this will <u>create less diversity</u> in the world. The problem with designer babies is that when their population has grown to a considerable size, more individuals will have the same set of genes. With this, there will be less variation in the gene pool. As a result, the new generation will become very susceptible to various disorders.

- **Modern Day Eugenics:**
  - Might lead to <u>modern day eugenics</u>. (Historical eugenics was defined by government and political groups trying to modify the gene pool through force.) Hitler wanted to create a superior Aryan race.
  - Another part could be to eliminate the strains of "so called "defective races or individuals example Jews, LGBTQ, disabled etc. Parents may use this technology for superficial purposes, such as purposely seeking out a blonde-haired, blue-eyed baby for appearance concerns only.

- **New Diseases:**
  - May accidentally <u>give rise to new forms of illnesses</u> that scientists are not yet aware of.

- **Genetic Doping**
  - i.e inserting DNA for the purpose of enhancing athletic performance.

- **Bio-Weapon:**
  - Humans can be reared like animals so that it can lead to the formation of genetic bio-weapons.

Conclusion

- The increased ability to control and manipulate embryos presents many possibilities for improving the health of children through prenatal diagnosis.
- But these possibilities are coupled with potential social repercussions that could have negative consequences in the future.
- Thus, there remain many ethical questions that need to be addressed.

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DRONE ATTACK

GS-III   SECURITY & DEFENSE

Context
- The need for an anti-drone system shielding critical installations in the country came under sharp focus after drone attack on an IAF base in Jammu, 14 km from the international border.
- Jammu attack was the first such instance in India where a drone was weaponised.

What are Drones?
- It usually refers to **any unpiloted aircraft**.
- It is also referred to as "**Unmanned Aerial Vehicles" (UAVs)**, these crafts can carry out an impressive range of tasks, ranging from **military operations to package delivery**.
- Drones can be as large as an aircraft or as small as the palm of your hand.

Recent instances of Drone Attack
- Drones have been used in the Middle East, particularly in Iraq and Syria, by the US to carry out targeted assassinations.
- In 2020, Iranian general Qasem Soleimani was killed in a US drone strike in Iraq.
- In 2018, Venezuelan President Nicolas Maduro claimed he survived an assassination attempt involving drones rigged with explosives.

How to counter the drone threat?
- Anti-drone system are required to counter hostile Unmanned Aerial Vehicles (UAVs), popularly known as drones.
- Companies, predominantly based out of Israel, US, and even China, have developed **anti-drone systems using existing technologies such as radars, frequency jammers, optic and thermal sensors** etc.
- Some systems simply monitor and alert the presence of a drone, while others are equipped with ballistics and even lasers.

Why there is a need for an anti-drone system?
- At present, the only option is to shoot down the drones.
- Sighting drones, especially during night, is not easy.
- It require sniper fire and the drone to be within range.

What are the existing anti-drone systems?
- Rafael's **Drone Dome can detect** and intercepts drones.
- Drone Dome is also capable of jamming the commands being sent to a hostile drone and blocking visuals, if any, that are being transmitted back to the drone operator.

Is there an indigenous solution for India?
- The Defence Research and Development Organisation (DRDO) has developed an **'Anti DroneSystem'** and it will be deployed this year.
- The anti-drone system can detect and jam drones up to 3km and uses a laser weapon to fire at targets that are 1 to 2.5km away.
- Navy is procuring **Smash-2000 rifles to counter drones**.

Some uses and application of Drone technology
- Aerial photography for journalism and film
- Express shipping and delivery

- Gathering information or supplying essentials for disaster management
- Thermal sensor drones for search and rescue operations
- Geographic mapping of inaccessible terrain and locations
- Building safety inspections
- Precision crop monitoring
- Unmanned cargo transport
- Law enforcement and border control surveillance
- Storm tracking and forecasting hurricanes and tornadoes.

Practical applications for Unmanned Aerial Vehicles

DJI Spreading Wings S800 Evo

Emergency Services & Disaster Recovery
1. Disaster & hazmat monitoring
2. Emergency delivery (medicine, equipment, supplies...)
3. Emergency response coordination (situational awareness)
4. Disaster relief & post-disaster assessment
5. Search & rescue

Urban Planning, Real Estate, Architecture & Engineering
21. Construction management
22. Environmental design (architecture, engineering, landscape architecture, urban design)
23. Mapping (archaeology, resource, topography...)
24. Marketing
25. Site analysis, planning & design

Security Services
6. Crime scene investigation
7. Criminal surveillance & tracking
8. Police response coordination
9. Security surveillance
10. Training & evaluation

Media & Communications
26. Advertising & marketing
27. Art (commercial design, fine art, social practice...)
28. Entertainment (film, television, Internet...)
29. Investigative journalism
30. News photography & videography

Agriculture, Aquaculture, Silviculture, Viticulture
11. Chemical & biological monitoring (irrigation, pesticides, treatments...)
12. Flood & fire detection & monitoring
13. Inventory & records
14. Pest & disease detection & treatment
15. Precision operations & management

Business & Commerce
31. Aero-technology / robotics research & development
32. Documentation (accident reporting, building verification, site status...)
33. Exploration (water, oil, gas, mineral...)
34. Inspection (infrastructure, structural, industrial...)
35. Pick-up & delivery services

Environmental Management
16. Environmental hazard assessment
17. Environmental impact assessment & compliance
18. Invasive species & pest control
19. Scientific research
20. Wildlife & habitat monitoring & protection

Recreation & Entertainment
36. Exploration
37. Group activities & events
38. Hobby (do-it-yourself & kit building)
39. Personal photography & videography
40. Remote control flying

Drone regulation in India
2021 India drone rules are

- If any liability arises because of any damage to a person or property, the **drone operator is held accountable.**

Drone Operator Permits for Different UAV Categories

- **Nano Drones**: For drones weighing **less than or equal to 250 grams**, no license or permit is needed.
- **Micro or Small Drones:** To fly a drone weighing **more than 250 grams** and less than or equal to 25 kilograms, whether for commercial or recreational purposes, one need the UAS Operator Permit-I (UAOP-I).
- **Medium and Large Drones**: For any operation that requires a drone weighing more than 25 kilograms, one need the UAS Operator Permit-II (UAOP-II).

Exemptions to Drone Permit

- The **Central Government can exempt** any Ministry, Department, or a government-affiliated agency – at both the central and state level – from the requirements of a drone operator permit if it is **national interest or helps to uphold the security of the country.**

No-Fly Zones in India for Drone Operations
In India, no drone shall be flown

- Within a distance of 5 km from the perimeter of **international airports at Mumbai, Delhi, Chennai, Kolkata, Bengaluru, and Hyderabad**
- Within a distance of 3 km from the perimeter of any civil, private, or defense airports
- Within 25 km from the **international border** which includes Line of Control (LoC), Line of Actual Control (LAC), and Actual Ground Position Line (AGPL)
- Within 3 km from the perimeter of military installations/facilities without clearance
- Within 5 km radius from Vijay Chowk in Delhi, etc.

Flight Permission and Flight Log

- Except for the Nano category, all drone operations shall take place only after prior permission has been received for a flight or series of flights through the **Digital Sky online platform.**
- The drone operator will also ensure that the aircraft stays within the defined area for which permission was

obtained, and furnish a log of each flight through the online platform.

Obtaining a Drone Pilot License in India

- **Student Remote Pilot License**: These are issued for a fee by an authorized training organization. A student license remains valid for a maximum period of 5 years, and can be renewed for an additional period of 2 years.
- **Remote Pilot License:** These are issued for a fee by the DGCA, subject to the submission of a certificate of training and a skill test report from an authorized training organization. A remote pilot license is valid for 10 years, and can be renewed for another 10 years with each renewal application.
- **Minimum Qualifications**: One should have passed class X or its equivalent examination from a recognized Board. Cleared a medical examination as specified by the DGCA.
- **Age Criteria:** The minimum age to apply for both student and remote pilot licenses is 18 years. The maximum age at which you can exercise the privileges of a remote pilot license for commercial activities is 65 years.

Penalties for Illegal Drone Flying in India

- Except for Nano category drones, any individual who operates a drone **without a valid license or permit shall have to pay a fine of INR 25,000.**
- Flying over no-operation zones will attract a fine of INR 50,000.
- Drone flying without valid third-party insurance will be subject to a fine of INR 10,000.

HELPLINE FOR CYBER FRAUD

GS-III SECURITY & DEFENSE

Context

- Union Home Minister launched a **national helpline, 155260,** and its reporting platform **for preventing financial loss due to cyber fraud.**
- The helpline has been made operational by **the Indian Cyber Crime Coordination Centre**, in coordination with the Reserve Bank of India, all major banks, payment banks, wallets and online merchants.

COMPLAINTS RECEIVED ON CYBER PORTAL (JAN-AUG 2020)

Month	Complaints
January	1,479
February	2,091
March	1,895
April	3,367
May	4,184
June	3,205
July	4,113
August	3,821

NATURE OF CYBERCRIME
- Other cybercrimes — 17%
- Related to social media — 24%
- Online financial fraud — 59%

CYBERCROOKS ON THE PROWL

TRENDS DURING THE PANDEMIC
Geographic clusters of specific modus operandi have come up in different parts of the country

- JOB FRAUDS — Delhi/NCR
- FAKE GOVT WEBSITES — North Rajasthan
- OLX-BASED QR CODE FRAUDS — Mewat tri-junction
- SOCIAL MEDIA SOS FRAUD — Western UP
- Eastern UP/Bihar
- FAKE COMMERCIAL WEBSITES
- KYC/UPI FRAUDS — Bihar tri-junction, Jharkhand (Jamtara), West Bengal
- Online harassment cases on the up

Modus operandi of online frauds has become diversified and is closely mimicking the online behaviour of internet users

IMPACT OF COVID ON CYBERCRIME

1. New ways to cheat citizens
   - Fake shopping sites
   - Frauds in the name of humanitarian work, SOS messages
   - Job frauds targeting recently laid-off people
   - Fake online-food delivery advertisement on Facebook
2. New users of digital payment apps targeted with old methods – KYC verification, SIM-swap frauds
3. Phishing links in the name of Covid news and alerts pushed through WhatsApp
4. Fake govt websites offering financial assistance and subsidies
5. Fake PM CARES UPI IDs to fraudulently receive public donations

Why India needs a robust cyber security strategy?

- **Demonetization and Covid-19** have pushed Indians to adopt digitization. Work from home is now accepted as a new normal.
- India's **digital growth will not be sustainable** if we do not have a strong shield in the form of data protection laws and privacy policies.
- To address the issue of **protecting critical information infrastructure in cyberspace, build integrated capabilities to prevent and respond to cyber threat**.
- India has **one of the highest number of internet users** in the world and is also **among the top-10 countries facing cyber-attacks.**
- To address the **current gaps in governance** and to provide a strong framework to handle issues related to cyber security.
- There is **no centralized command** to have oversight and coordinate efforts to handle larger cyber security issues.
- **To protect domestic interest:** The discovery of potential North Korean malware at both the Kudankulam Nuclear Power Plant and the Indian Space Research Organisation (ISRO) last year, and recent revelations of a Chinese firm tracking Indians' personal data highlight just how vulnerable Indian cyberspace can be.

WHY CYBER SECURITY MATTERS

4.1B internet users globally
1.9B online purchases annually
5B Google searches every day
1.9B websites

Recently, it was reported that nearly ₹7,800 crore was siphoned off in 2018-19 through cyber crimes. The current IT Act is very weak and police have to add additional IPC sections to cyber crime offences to make the case strong —**Prashant Jhala** | CO-FOUNDER OF INDIAN CYBER LAWYERS AND INDIAN CYBER INSTITUTE

There are three pillars or ways of how the state needs to respond to issues of cyber security — first, we have to come up with a proper cyber security policy. Second, policies will remain on paper if not translated into action. Third, we need to collaborate, as no one knows everything —**Jayesh Ranjan** | IT SECRETARY, TELANGANA

Suggestions

Unified cyber security framework

- **Dedicated authority:** Currently National Cyber Security Coordinator (NCSC) and Indian Computer Emergency Response Team (CERT-In) are handling cyber security issues in India. There is an urgent need of having a comprehensive and unified government institution for creating a **cyber defence network**
- **Unified inter-regulator:** Currently, RBI, SEBI, IRDAI, TRAI, PFRDA, etc., have different cyber security framework for their regulated entities. However, none of the frameworks talk about inter-regulator coordination or integrated approach to handle cybercrime.
- A **holistic cyber security strategy** with a possible **amendment in the IT Act,** as some of its provisions have become redundant and can't address issues arising from the evolving threats.
- **Cyber Defence Agency**: Government needs to consider creating a Cyber Defence Agency, which is to be entrusted with the responsibility to implement the cyber defence strategy solely for national security.
- **Constitution of cyber commando force** as a part of the defence program to neutralize any cross-border cyber terrorism or cyber-attack.
- Create **specialized cyber police cadres** in all State police departments.
- **Sectorial CERT and state-level CERT** would be more effective for rapid response on any cyber-attack. The state-level CERT team will need to ensure speedier incident response and coordination with national agencies.
- Building a business ecosystem to leverage artificial intelligence and robotics to improve cyber defence.
- Pass the proposed Data Protection Bill to protect critical information like personal data, business information, and financial information.

Conclusion

- It is high time that we **consider amendment of the existing IT Act, 2000**, which is not fully synced with today's cyber threat.
- In addition to the IT Act, it's already delayed but high time to introduce data privacy laws.

PROPOSED INTEGRATED THEATRE COMMANDS

GS-III   SECURITY & DEFENSE

Context

- Chief of Defence Staff General held a meeting with the Vice Chiefs of the Army, the Navy and the Air Force in the backdrop of concerns about the proposed model of the integrated theatre commands — both within the Services and outside, involving paramilitary forces as well.

What are integrated theatre commands?

- It is a **unified command** under which all the resources of the Army, the Navy and the Air Force are pooled, depending on the threat perception.
- The commands could be
  - **geographical —** like looking at a border with a particular country — or
  - **Thematic,** like a command for all maritime threats.
- Several nations in the world have theatre commands, including the **United States and China**.

Are theatre commands a new idea?

- The idea of creating an integrated tri-Services command had been recommended at various levels after the Kargil conflict.
- When Chief of Defence Staff was appointed in January 2020, the idea was finally brought to the design table.

What is the proposal under discussion?

- A model with four to five integrated tri-Services theatre commands is under discussion, with each command headed by a three-star officer.
- This officer, the theatre commander, will report to the Chiefs of Staff Committee (COSC).
- Operational control over all of those assets, regardless of the force, will lie with the commander of that theatre.

The proposed commands are

- **A Maritime Theatre Command,** which will take care of all the maritime security needs of the country on both the eastern and the western seaboards.
- **An Air Defence Command**, which will be mandated with air defence across the country and beyond.
- **Two or three land-based commands** one each for India's borders with China and Pakistan.
- Apart from these theatre commands, there will be **two functional tri-Services commands** as well.
- There will be a **Logistics Command**, which will have the logistics of all the Services under one person.
- **Training and Doctrine Command**, so that all Services work under a common doctrine and have some basic common training.

What will be the role of the Services command?

- It will enhance the jointness among the forces, and also reducing duplication of resources.
- This would make the Service chiefs to focus on the core tasks of Raising, Training and sustainingtheir respective forces.
- As each chief will be a member of the COSC, and an expert of his/her domain, his or her inputs will be necessary for all operational decisions.

How many commands are there now; are any of them tri-Service commands?

- As of now, the three forces have 17 commands between them.
- The **Army** has **seven commands**: Northern, Eastern, Southern, Western, Central, Southwestern and Army Training Command (ARTRAC).
- The **Air Force has seven** as well: Western, Eastern, Southern, Southwestern, Central, Training, and Maintenance

commands.

- The **Navy has three**: Western, Eastern and Southern, of which Southern is largely about training.
- There are **two existing tri-Service commands**
  - the **Andaman and Nicobar Command (ANC),** which is headed by rotation by officers from the three Services, and
  - The **Strategic Force Command**, which is responsible for India's nuclear assets.

DIGITAL NEWS REPORT, 2021 / *GS-III SECURITY & DEFENSE*

Context
- The Reuters Institute Digital News Report, 2021 released.

India's performance
- India ranked **31 out of 46 countries** on level of trust in news.
- Only 38% of the respondents from India said they trust news overall.
- **This is the first time India features in the main report**.
- It showed India is one of the strongest mobile-focused markets, with 73% of the respondents using smartphones to access news.
- 82% of the respondents in India source news online, including on social media, with WhatsApp and YouTube being the top go-to platforms.
- Concerns of **rampant misinformation** on these platforms were also high.
- The Asian College of Journalism (ACJ) in Chennai collaborated with the Reuters Institute for the Study of Journalism (RISJ) at the University of Oxford on the report.

Key highlights
- Finland had the highest levels of overall trust in news (65%) while the U.S. had the lowest levels of trust (29%).
- Print media and government broadcasters score high on trust levels in the survey.
- However, print media suffered heavily from the economic slowdown due to the pandemic with decrease in advertisement revenues and circulation, resulting in job losses and salary cuts.

What is fake news?
- Fake news is **false or misleading information** presented as news.
- It often has the aim of **damaging the reputation of a person or entity, or making money through advertising revenue**
- It can be communicated in formats spanning spoken, written, printed, electronic, and digital communication.
- Once common in print, the prevalence of fake news has increased with the rise of **social media, especially the Facebook News Feed.**

The Rise of False Information or fake news
- False information has become a hot topic since 2017.
- Traditionally news comes from trusted sources, journalists and media outlets that are required to follow **strict codes of practice**.
- However, the **internet** has enabled a whole new way to publish, share and consume information and news with **very little regulation or editorial standards**.
- Many people now get news from social media sites and networks and often it can be difficult to tell whether stories are credible or not.
- Social media sites have played a big part in increasing the reach of these types of stories as the economics of social media favor gossip, novelty and speed.
- Lack of comprehensive regulation, proper entry barriers for online news and information portals.

- Lack of social cohesion, distrust and rising hatred among different groups has aided the process of spreading hoax.
- It has become a way to earn money through advertising fake news with click bait headlines.
- Cheap internet rate, free public WI-FI has increased the reach of fake news even to the rural areas.
- Availability of social media platforms in all most all vernacular languages of India has further promoted the spread of fake news.

Impacts of fake news

- Fake news can **reduce the impact of real news by competing with it**. It also has the potential to undermine trust in serious media coverage.
- **Political polarization, post-truth politics, confirmation bias, and social media algorithms** have been implicated in the spread of fake news.
- Misleading content can cause **moral panic and hurt public trust.**
- **Fake news in India has led to violent incidents between castes and religions, interfering with public policies.**

How to spot fake news?

Way to combat fake news

- **Responsible citizenry and aware users**: Educating internet users about major implication of spreading hoax and persuading them to confirming the reality of news before spreading it can help.
- Use of Artificial intelligence to detect fake news.
- Legislators can considering creating a "**Fake News Advisory Board**" to study how false information spreads online and suggest solutions for the problem.
- In India, Facebook began taking out newspaper ads recently to combat the spread of maliciously false information on its popular messaging service WhatsApp after mounting pressure from the Indian government.
- Compulsory registration of online content creator, publishers and editors of media house can create a deterrence for online media house or individual content creators.
- Government establish an independent agency that will be tasked with presenting real facts and figures and will counter Social media websites to make them accountable for their actions.

Measures taken

- Twenty countries, including **France, Britain and India have signed an agreement at the United Nations** to stop the spread of fake news on-line.
- Recently, the Supreme Court has asked the Centre to explain its mechanism against fake news and create one if it did not already exist.
- Facebook began taking out newspaper ads recently to combat the spread of maliciously false information from WhatsApp after pressure from the Indian government.

Ethics of Journalism

- The cardinal rule of journalism is to **verify before sharing news**.
- Fake news **strengthens the hands of those nations who are determined to show India in poor light**.
- The crisis in the media has been simmering for years. This same media stood horribly discredited in the summer of 2009 when **journalists were not reporting on Cabinet berths but fixing them.**
- The **right to free speech** is also complemented by duties. If you have a **right as a journalist, you have a duty towards the nation** — besides the duty of being truthful as a journalist.
- Moreover, institutions must **introspect and have the ability to self-correct**. Many healthy institutions display this characteristic.

Conclusion

- Fake news is a problem for all of us, then, so we all have to solve it.
- We each have the capacity to cut through the muck and emerge as well-informed citizens ready to tackle the challenges of the 21st century.
- And our ability to have both a functioning democracy and a functioning economy depends on us doing just that.

I-FAMILIA-GLOBAL DATABASE

GS-III   SECURITY & DEFENSE

Context

- The Interpol has launched a new global database named "I-Familia" **to identify missing persons through family DNA and help the police solve cold cases in member countries.**

About I-Familia

- It can **identify missing persons through family DNA and help the police solve cold cases in member countries.**
- It applies cutting-edge scientific research and used the DNA of relatives to identify missing persons or unidentified human remains around the world.
  - DNA kinship matching is used mostly in cases where a direct sample of the missing person is not available.

- I-Familia has **three components**:
  - A **dedicated global database** to host the DNA profiles provided by relatives, held separately from any criminal data;
  - **DNA matching software called Bonaparte**, developed by Dutch company Smart Research; and
  - **Interpretation guidelines** developed by Interpol.
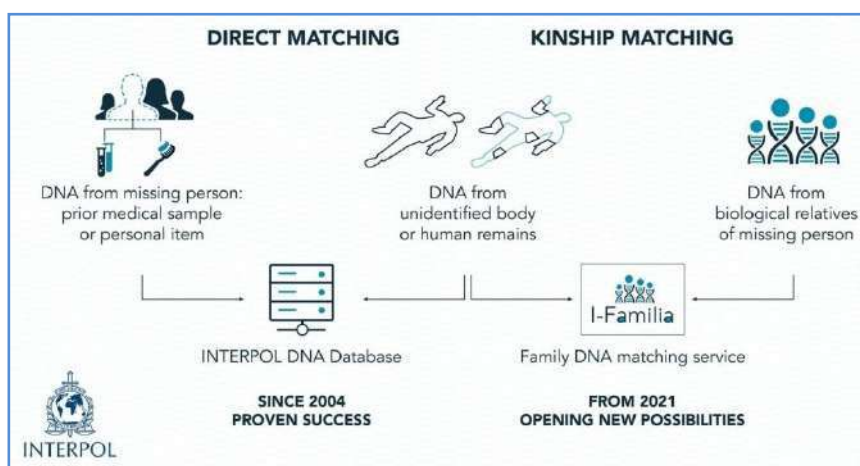
- Family members **must give their consent for their data to be used for international searching.**

About INTERPOL

- International Criminal Police Organization is **an international organization that facilitates worldwide police cooperation and crime control.**
- With 194 member states, it the world's largest police organization.
- **India is also a member state. India will host the 91st Interpol General Assembly in 2022.**
- It is the **world's largest police organization.**
- Contrary to popular belief, **INTERPOL is itself not a law enforcement agency.**
- It provides **investigative support, expertise, and training to law enforcement** worldwide, focusing on following major areas
  - Transnational crime: terrorism, cybercrime, organized crime, crimes against humanity, child pornography, drug trafficking and production, political corruption, intellectual property infringement, and white-collar crime.

INTERPOL Notices

- These are **international requests for cooperation** or alerts allowing police in member countries to share critical crime-related information.
- Notices can also be used by the United Nations, International Criminal Tribunals and the International Criminal Court to seek persons wanted for committing crimes within their jurisdiction, notably genocide, war crimes, and crimes against humanity.

Types of Notice

- **Red Notice:** To seek the location and arrest of wanted persons wanted for prosecution or to serve a sentence.
- **Yellow Notice:** To help locate missing persons, often minors, or to help identify persons who are unable to identify themselves.
- **Blue Notice**: To collect additional information about a person's identity, location or activities in relation to a crime.
- **Black Notice**: To seek information on unidentified bodies.
- **Green Notice:** To provide warning about a person's criminal activities, where the person is considered to be a possible threat to public safety.
- **Orange Notice**: To warn of an event, a person, an object or a process representing a serious and imminent threat to public safety.
- **Purple Notice**: To seek or provide information on modus operandi, objects, devices and concealment methods used by criminals.
- **INTERPOL–United Nations Security Council Special Notice:** Issued for groups and individuals who are the targets of UN Security Council Sanctions Committees.

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5G EFFECTS

GS-III ENVIRONMENT & ECOLOGY

Context
- Actress Juhi Chawla has moved the Bombay High Court against 5G rollout in India. This lawsuit against 5G has raised debate around harmful effects of mobile phone radiation

What is 5G?
- It is the **fifth-generation of wireless networks for mobile broadband** that promises **ultra-fast connectivity and low-latency.**

Brace for 5th Generation

Telecom networks are set for a massive overhaul, which will make interaction with machines more immediate and real

SERVICES OFFERED BY 5G	HUMAN TO HUMAN	HUMAN TO MACHINE	MACHINE TO MACHINE
Extreme mobile broadband *Addresses human-centric data-driven apps for multimedia content, services*	Virtual Reality | Augmented Reality; Video Calling; Virtual Meetings	Fixed Wireless; Ultra high-definition Video	Video Monitoring; Mobile Cloud Computing
Massive-scale communication *Characterised by very large number of connected devices*	Wearables; Social Networking	Smart Homes | Smart Cities; Healthcare Monitoring	Vehicle to Infrastructure communication (being developed); Industrial Automation
Ultra-reliable, low latency service *Supports delivery of critical communications*	Public Safety	Remote Surgery; Vehicle to Pedestrian (being developed)	Vehicle to Vehicle communication (being developed)

Sources: *Enabling 5G in India*, White Paper by the Telecom Regulatory Authority of India

Why government is opting for 5G technology and when will it roll out in India?
- 5G promises to **revolutionise mobile broadband.**
- It will ensure fast internet on phones and will **help to power IoT (Internet of Things) networks** to run connected cars and homes smarter.
- Bharti Airtel, Reliance Jio and Vodafone Idea have been given trial spectrum to test 5G technology in the country.
- The **5G rollout is expected to gather pace in the country by 2022.**

Concerns regarding impact of 5G:
- 5G technology and associated low intensity radiofrequency (RF) and electronic magnetic field (EMF) radiation have adverse impact on human health and environment.
- RF radiation from wire free gadgets and network cell towers are **extremely harmful and injurious to the health and safety of the people, animals and birds.**

Impact of 5G radiation on human health
- M**ore powerful 5G require more towers** to ensure better connectivity, thus will increase human exposure to radiation.

- Low-level RF-EMF radiation, from cellphone towers, mobile phones, WiFi routers are called **non-ionising radiation, which have been classified by WHO's** International Agency for Research on Cancer (IARC) as **possibly carcinogenic to humans (Group 2B).**
- Radiation at very high levels, also referred to as **ionising radiation, heats up our tissue and can eventually lead to cancer.**

Impact on the environment

- Studies done in India have shown that **bee colonies have collapsed due to exposure to radiation from mobile phone towers.**
- Radiations will **affects plant growth and sprouting and the amount of damage is proportional to the radiation received.**
- As it destroys cells, **the chances of mutation in flora and fauna are increased.**
- Due to radiation exposure **soil can become compact and lose the nutrients needed for plants to grow.**

GLOBAL NITROGEN CONFERENCE   *GS-III ENVIRONMENT & ECOLOGY*

Context

- The United Nations (UN) Sustainable Development Goals (SDGs) were the main focus of the eighth **triennial conference** of **the International Nitrogen Initiative (INI).**

Highlights of the conference

- Assessing and managing nitrogen compounds sustainably were considered as crucial to achieve the 17 UN SDGs targeted for 2030.
- For the first time since its inception, its conference was being hosted by **Germany's Federal Environment Agency** (Umweltbundesamt–UBA).

Need for this initiative

- **Reactive nitrogen compounds** like NOx, ammonia and the greenhouse gas nitrous oxide **impact air, water and soil quality**, health, biodiversity and climate change, among others.
- Millions of lives and livelihoods are affected by nitrogen pollution, as **Nitrous oxide has upto 300 times higher global warming potential** than carbon dioxide.
- Assessing and managing them sustainably will be crucial to achieve the 17 UN SDGs targeted for 2030.
- The **Indian nitrogen assessment of 2017** has provided a huge impetus to the ongoing South Asian nitrogen assessment.

> **International Nitrogen Initiative (INI)**
> - It was established formally in 2003.
> - **Aim:**
>   - To review the current understanding of the nitrogen cycle.
>   - To interact with decision makers and practioners in order to identify management options that optimize the use of nitrogen fertilizers.
>   - To minimize the negative effects of nitrogen on human health and the environment as a result of food and energy production.
> - INI is a global network of scientists, created and sponsored by **SCOPE and the International Geosphere-Biosphere Programme (IGBP)**, with regional centres in Europe, North America, Latin America, Africa, South and East Asia.
> - The INI holds a **conference every three years**, inviting members of the international nitrogen community to meet up and discuss ideas and exchange knowledge on nitrogen issues.

Nitrogen -the essential ingredient

- It is an **essential building block for amino acids, proteins** and DNA.
- Plant growth depends on it; animals and people get it from eating plants or other animals.
- Nitrogen gas (N_2) makes up 78% of the air.
- **Fertilisers are usually made from ammonia, a form of nitrogen that the plants prefer.**

Nitrogen pollution
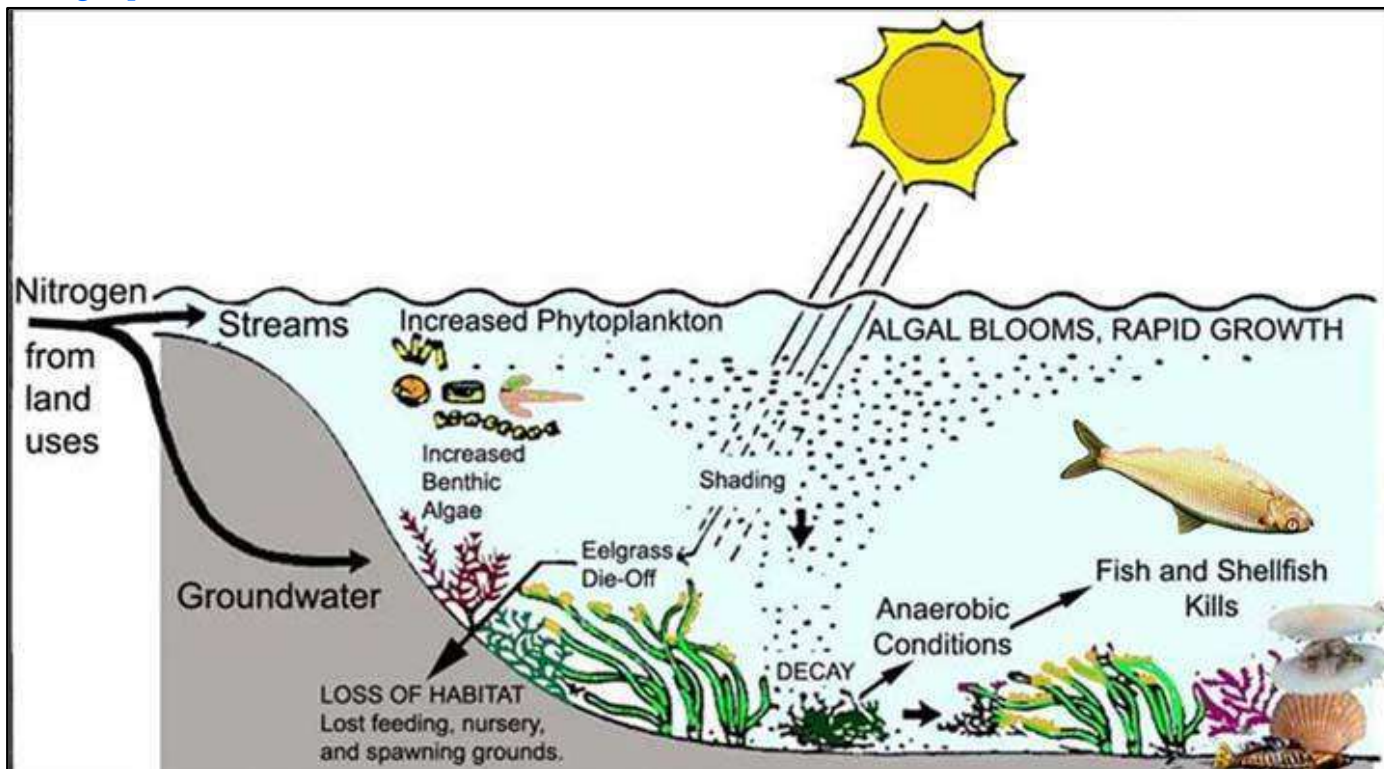
Nitrogen pollution source

The primary sources of excess nitrogen are

- o **Agriculture:** The nitrogen in animal manure and chemical fertilizers when not fully utilized by plants they can be lost from the farm fields and negatively impact air and downstream water quality.
- o **Storm water**: When precipitation falls on our cities and towns it runs across hard surfaces - like rooftops, sidewalks and roads - and carries pollutants, including nitrogen.
- o **Wastewater**: Our sewer and septic waste if not treated well, it discharge nitrogen into waterways.
- o **Fossil Fuels:** Electric power generation, industry, transportation and agriculture have increased the amount of nitrogen in the air through use of fossil fuels.
- o Fertilizers, yard and pet waste and certain soaps and detergents containing nitrogen can contribute to nutrient pollution if not properly used or disposed.

Impacts of Nitrogen pollution

- **Environmental and human health costs** of nitrogen pollution are estimated to be 70-320 billion dollars per year.
- Nitrogen emissions such as ammonia, nitrogen oxide and nitrous oxides contribute to **particulate matter and acid rain.**
- It causes **respiratory problems and cancers** for people and damage to forests and buildings.
- Nitrogenous gases also play an important role in **global climate change.**
- Nitrogen from fertiliser, effluent from livestock and human sewage boost the **growth of algae and cause water pollution.**

Major initiatives taken to combat N-pollution

- The **N-Footprint project**, was launched that aims to help individuals and institutions calculate their nitrogen footprints. It help to reduce the impact of nitrogen pollution through our everyday choices.
- **Nitrification inhibitors** are used commercially to keep nitrogen in the ammonium form, which plants prefer, and to prevent the accumulation of nitrate, which is more easily lost to the environment.
- **Monitoring and Assessing Water Quality** is encouraged to locate both point and non-point source of nitrogen waste discharge.
- The **International Nitrogen Management System** was launched in 2016 and is led by the Centre for Ecology & Hydrology on behalf of the UN Environment Programme (UNEP) in partnership with the International Nitrogen Initiative.
- **Neem coated Urea** was launched to regulate the fertilizer usage and to help plants to gain more nutrient. It lower underground water contamination due to leaching of urea.

Conclusion

- The solution to the nitrogen challenge will need to come from a combination of technological innovation, policy and consumer action.

MANGROVES

GS-III   ENVIRONMENT & ECOLOGY

Context

- In the wake of back-to-back cyclones, experts highlight the importance of mangrove forests in protecting the coastal regions against the damaging effects of storms.
- **Cyclone Tauktae** formed in the Arabian Sea and affected coastal districts in Kerala, Karnataka, Goa, Maharashtra and Gujarat.
- **Cyclone Yaas** formed in the Bay of Bengal and ravaged parts of Odisha and West Bengal.

What is a mangrove?

- A mangrove is a small tree or shrub that grows along coastlines, **taking root in salty sediments, often underwater.**
- These are flowering trees, belonging to the families Rhizophoraceae, Acanthaceae, Lythraceae, Combretaceae, and Arecaceae.

WHAT are some of the special features of mangroves?

- **Saline environment:** A speciality of mangroves is that they can survive under extreme hostile environment such as high salt and low oxygen conditions. Mangrove trees contain a **complex salt filtration system and complex root system** that filter out 90% of the salt when come into contact with saline and brackish water.
- **Low oxygen:** In a mangrove environment, the oxygen in soil is limited or nil. Hence the mangrove root system absorbs oxygen from the atmosphere. Mangroves have special roots for this purpose called **breathing roots or pneumatophores**.
- Mangroves, like desert plants, store fresh water in thick succulent leaves. A **waxy coating on the leaves** seals in water and minimises evaporation.
- **Viviparous** – their seeds germinate while still attached to the parent tree.

How do mangrove forests help protect against strong cyclones?

- Mangrove forests **act as natural barriers against storm surge, coastal flooding and sea level rise.**
- Their intricate root system **stabilises the coastline, reducing erosion from storm surges.**
- Together with the tree trunks, they work like **speed-breakers to slow down the tides.**
- They **protect shorelines from damaging winds and waves.**
- Mangroves also **help prevent erosion by stabilising** sediments with their tangled root systems.

What are their other benefits to the environment?

- Mangrove thickets **maintain water quality by filtering pollutants and trapping sediments originating from land.**
- They **provide habitat for a diverse array of terrestrial organisms.** Their branches provide homes for lizards, snakes and nesting birds.
- Mangroves are **powerhouses when it comes to carbon storage.** Mangroves can sequester greater amount of carbon than other trees in the peat soil beneath.
- Many people living in and around mangroves depend on them for their **livelihood.** The trees are a source of wood for construction and fuel.
- The ecosystem provides local fishermen with a rich supply of fish, crabs and shellfish. The ecosystem also **supports tourism.**

Where are mangrove ecosystems found?

- Mangroves can be found in **the tropical and subtropical regions of the world.**
- **Asia has the largest coverage of the world's mangroves,** followed by Africa, North and Central America, Oceania and South America.

How to protect the mangroves?

- To protect the ecosystem of mangroves it is required to **conserve the associated water bodies from pollution, destruction and climate change.**
- **Regular monitoring of existing mangroves** and creation of systematic data can help a lot in planning the conservation techniques.
- **Involvement of local people** especially the indigenous people for planting new sapling and help to reduce the pace of mangrove degradation.
- Mangrove species should be **included in the Red List** of the International Union for Conservation of Nature (IUCN) to boost the mangrove species conservation.
- **New techniques like mangroves engineering** can be used to plant news trees.

MANGROVE ENGINEERING

Various species of mangroves to be planted at 1.65km stretch on Pulau Tekong to stop erosion

1 Existing mangroves. About 1,300 trees are already leaning over. If the coastline erodes further, they are likely to fall.

A **berm** (horizontal ledge in the sloping seashore), formed by erosion of the shoreline.

2 Biodegradable sacks filled with suitable mud and put in the undercut beneath the berm.

3 Rocks of varying sizes, to add support to the shoreline.

MALAYSIA — Johor Strait

Eroding mangrove on the seaward side → Pulau Tekong

SINGAPORE

NOTE: Project area is along a roughly 1.65km stretch of shoreline on the north-east coast of Pulau Tekong, about 760m from the Singapore-Malaysia international boundary.

4 Mangrove saplings encourage more natural growth of mangroves, and replace those already lost. About 6,000 to 8,000 will be planted in all.

Mangroves that reproduce quickly will be planted here to shore up the coastline

Hardy mangrove species that can withstand high tides and strong waves

5 Bakau wood poles to dissipate wave energy

In India

- The deltas of the **Ganges, Mahanadi, Krishna, Godavari, and the Cauvery** rivers contain mangrove forests.
- The backwaters in Kerala have a high density of mangrove forest.
- The **Sundarbans in West Bengal is the largest mangrove region in the world and a UNESCO World Heritage Site**. It spans from the Hooghly River in West Bengal to the Baleswar River in Bangladesh.
- The **Bhitarkanika mangrove system in Odisha** is India's second largest mangrove forest.
- **Pichavaram in Tamil Nadu** has a vast expanse of water covered with mangrove forests. It is home to many aquatic bird species.
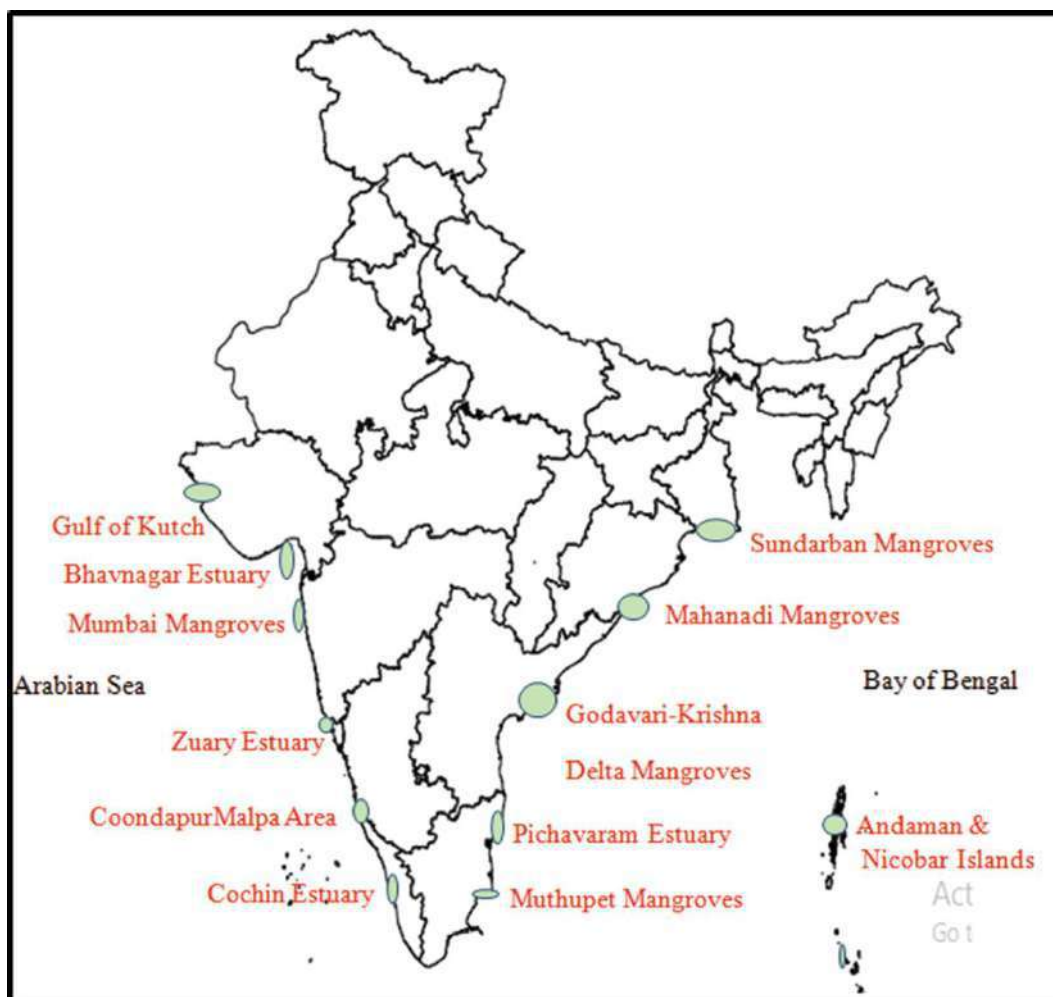
What are the threats to mangroves?

- At least **one third of all mangrove forests has been lost** during the last few decades.
- **Coastal development, including construction of shrimp farms, hotels, and other structures,** is the primary threat to mangroves.
- Mangrove forests are **cleared to make room for agricultural land and human settlements.**
- Mangrove trees are used for firewood, construction wood, charcoal production, and animal fodder. In some parts of the world, there has been **overharvesting** which is no longer sustainable.
- **Overfishing, pollution, and rising sea levels** are the other threats to mangrove forests and their ecosystem.

PAKKE TIGER RESERVE	GS-III ENVIRONMENT & ECOLOGY

Context

- More than 200 contingency workers of the Pakke Tiger Reserve in Arunachal Pradesh went on an indefinite strike over non-payment of wages since December 2020.
- The Pakke contingency workers were given their wages from April-November 2020 after the **National Tiger Conservation Authority (NTCA)** had sanctioned ₹6.05 crore for 2020-2021 fiscal and released a part of it.

Pakke Tiger Reserve

- Located in **western Arunachal Pradesh**
- **Pakke Tiger Reserve**, also known as Pakhui Tiger Reserve, is a Project Tiger reserve has won India Biodiversity Award 2016 in the category of 'Conservation of threatened species' for its Hornbill Nest Adoption Programme.
- In 2011, the **Hornbill Nest Adoption Program (HNAP)**, in collaboration with the Ghora-Aabhe Society (which is a village council) and the Arunachal Pradesh Forest Department was adopted.
- Hornbills play an important role in **Nyishi folklore** and culture. Today, the community helps hornbills by searching for, monitoring and protecting nests in the forests around their villages, thus becoming local guardians or nest protectors.
- **National Tiger Conservation Authority** was established in 2005 following a recommendation of the Tiger Task Force, to reorganise management of Project Tiger and the many Tiger Reserves in India. It is the overarching body for conservation of tigers in India.

Structure of NTCA

- **Environment Minister is the Chairman of the NTCA.**
- Below chairman are **eight experts** or professionals having qualifications and experience in wildlife conservation and welfare of people including tribals, apart from three Members of Parliament (1 Rajya Sabha, 2 Lok Sabha).
- The Inspector General of Forests, in charge of project Tiger, serves as ex-officio Member Secretary.

Functions

- Its main administrative function is **to approve the Tiger Conservation Plan prepared by the State Governments** and then evaluate and assess various aspects of sustainable ecology and disallow any ecologically unsustainable land use such as, mining, industry and other projects within the tiger reserves.
- As per the WLPA, **every State Government has the authority to notify an area as a tiger reserve.**
- However, the Tiger Conservation Plans sent by state government need to be approved by the NTCA first.
- Alternatively, Central Government via NTCA may advise the state governments to forward a proposal for creation of Tiger Reserves.

Other Functions of NTCA are as follows

- Regulation and standardization of tourism activities
- Provide for management focus and measures for addressing conflicts of men and wild animals.
- Provide information on protection measures.
- Ensure that the tiger reserves and areas linking one protected area or tiger reserve with another protected area or tiger reserve are not diverted for ecologically unsustainable uses, except in public interest and with the approval of the National Board for Wild Life and on the advice of the Tiger Conservation Authority.
- Facilitate and support the tiger reserve management in the State.
- Ensure critical support including scientific, information technology and legal support for better implementation of the tiger conservation plan.

POLLUTION IN GHAGGAR RIVER   *GS-III ENVIRONMENT & ECOLOGY*

Context

- The National Green Tribunal (NGT) has come down heavily on **Punjab, Himachal Pradesh and Haryana** for failing to stop the discharge of untreated effluents in the **Ghaggar river**.

Verdict highlights

- A Bench headed by NGT Chairperson said the three States and Chandigarh continue to contribute to **water pollution is breach of public trust under public trust doctrine**.

- Enactment of **Water (Prevention and Control of Pollution) Act, 1974 making discharge of untreated effluents into a water body a criminal offence**.
- Water pollution is a serious threat to the health of the citizens as well as other living beings who consume the water and also to the food safety for growth of which the water is used for irrigation.

Ghaggar river

- The Ghaggar rises in the Siwalik (Shiwalik) Range, in northwestern Himachal Pradesh state and flows through Haryana state, where it receives the Saraswati River.
- It eventually dries up in the Great Indian (Thar) Desert.
- The Ghaggar was probably once an affluent of the Indus River. Its seasonal flow is dependent on monsoonal (seasonal) rainfall.

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**.
- **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 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.

UN CLIMATE REPORT   *GS-III ENVIRONMENT & ECOLOGY*

Context

- UN climate report reveals dire health threats

Key highlights of the report

- **Hunger, drought and disease** will afflict tens of millions more people within decades, according to a draft UN assessment that lays bare the dire human health consequences of a warming planet.
- Report by the Intergovernmental Panel on Climate Change (IPCC), offers a distressing vision of the decades to come: **malnutrition, water insecurity, pestilence.**
- It warns of the cascading impacts that simultaneous crop failures, falling nutritional value of basic foods, and soaring inflation are likely to have on the world's most vulnerable people.
- It predicts that **up to 80 million more people than today will be at risk of hunger by 2050.**

COVID-19, climate and carbon neutrality

- It projects disruptions to the water cycle that will see rain-fed staple crops decline across sub-Saharan Africa.
- Up to 40% of rice-producing regions in India could become less suitable for farming the grain.
- The basis for our health is sustained by three pillars: the **food we eat, access to water, and shelter**. These pillars are totally vulnerable and about to collapse.

Emerging hotspots

- Rising temperatures **affect the availability of key crops and their nutritional value is declining.**
- **Depleted soils:** Another reasons for low nutrients can be that the soils supporting plants could be low in plant-available nutrients
- The protein content of rice, wheat, barley and potatoes, is expected to fall by between six and 14%, putting people at risk of **protein deficiency.**
- **Essential micronutrients** — already lacking in many diets in poorer nations — are also set to decline as temperatures rise.
- Extreme weather events made more frequent by rising temperatures will see **"multi-breadbasket failures"** hit food production ever more regularly.
- As climate change reduces yields, and **demand for biofuel crops and CO2-absorbing forests grows,** food prices are projected to rise.
- Across Asia and Africa, **10 million more children than now will suffer from malnutrition and stunting by mid-century.**

Water crisis looming

- The report outlines access to safe water will be thrown into turmoil by climate change.
- Up to three quarters of heavily tapped groundwater supply — the main source of potable water for 2.5 billion people — could also be disrupted by mid-century.
- The rapid melting of mountain glaciers will "strongly affected the water cycle.

'Fault lines'

- Warming planet **expands habitable zones for mosquitoes and other disease-carrying species**, the world's population could be exposed to vector-borne pathogens such as dengue, yellow fever and Zika virus by mid-century.
- **Climate change will increase the burden of non-communicable illnesses.**
- Diseases associated with poor air quality and exposure to ozone, such as lung and heart conditions, will "rise substantially".
- There will also be **increased risks of food and water-related contamination**" by marine toxins.
- Covid has made the fault lines in our health systems extremely visible.

GREAT BARRIER REEF   GS-III   ENVIRONMENT & ECOLOGY

Context

- The Great Barrier Reef should be added to a list of "in danger" World Heritage Sites a United Nations Educational, Scientific and Cultural Organisation committee, which sits under UNESCO recommended.

Story so far

- Australia has been battling to keep the Great Barrier Reef, a major tourist attraction that supports thousands of jobs, off the "in danger" list.
- Since 2015, scientists say Great Barrier Reef has suffered three major coral bleaching events due to severe marine heatwaves.

- The recommendation from UNESCO is clear and unequivocal that the Australian Government is not doing enough to protect our greatest natural asset, especially on climate change
- **Australia reliance on coal-fired power** makes it one of the world's largest carbon emitters per capita.

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.
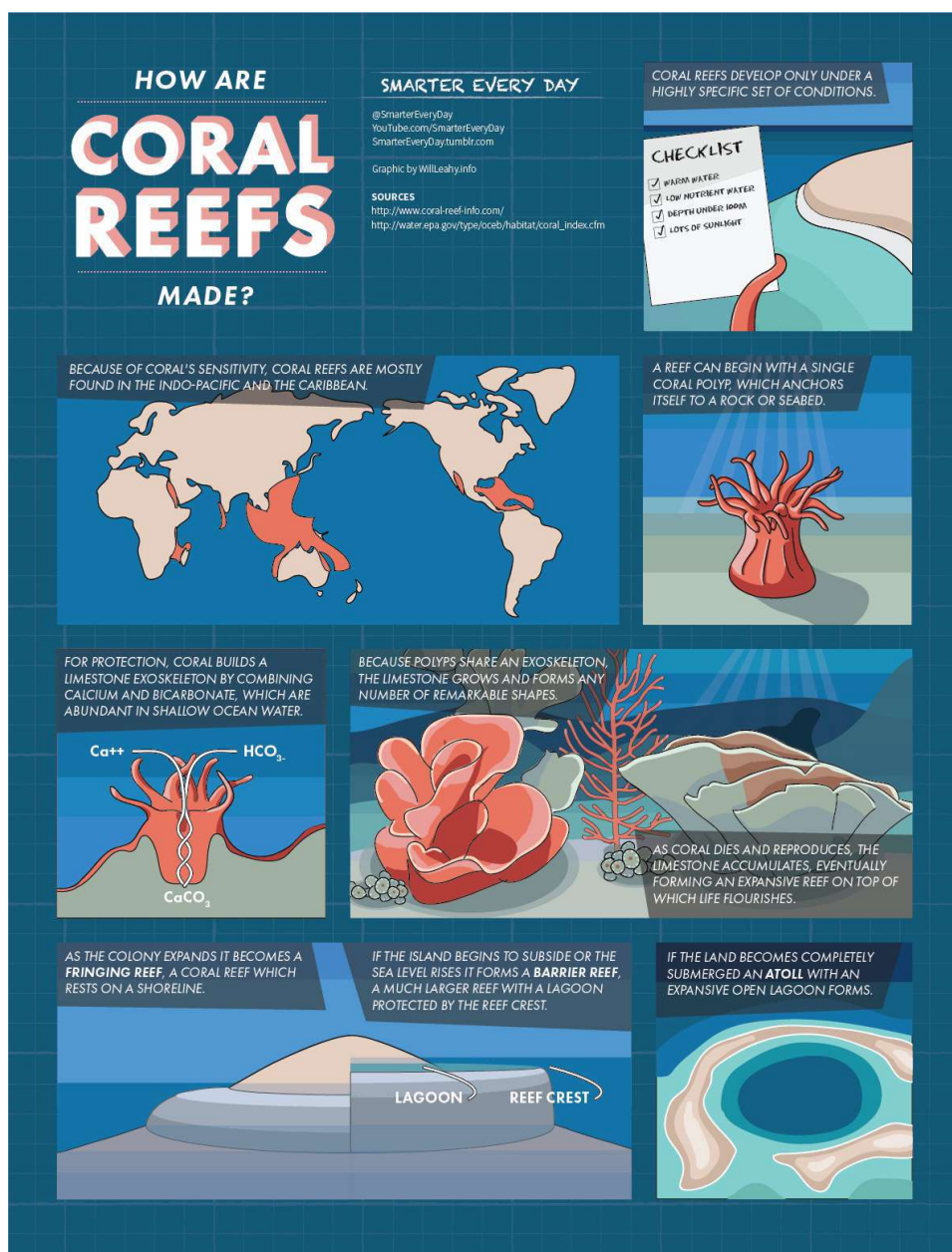
Why are coral reefs important?

- 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 **minimise 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.

SHORT NEWS ARTICLES

GS-I
CULTURE & HISTORY

Raja Parba

Context

- Recently, Raja Parba festival was celebrated.

About

- Raja Parba or Mithuna Sankranti, a 3-day festival to honour womanhood is celebrated across Odisha.
- The term Raja is derived from Rajaswala (meaning a menstruating woman).
- Mother earth is believed to be menstruating during this period and preparing herself for the coming agricultural season.
- During the medieval period, the festival became more popular as an agricultural occasion remarking the worship of Bhudevi, who is the wife of Lord Jagannath.

Pandav Leni

Context

- The Archaeological Survey of India (ASI) has found three caves in the **Trirashmi Buddhist cave complex, also known as Pandav Leni,** near Nashik, Maharashtra.

About

- Trirashmi caves are a group of 24 caves dated between 1BC and the 6-7AD.
- This is an ancient rock-cut sculptures complex located at Gomai River.
- Main sculpture room is Mahavir sculpture facing towards east, which is partially destroyed.
- These caves were carved and donated by various kings that ruled Nashik - The Satavahanas, The Nahapanas, The Abhirs.
- The caves lodge idols of Buddha and Bodhisattva representing the Hinayana tradition.
- Most of the caves are viharas except for Cave 18 which is a chaitya of the 1st century BCE.
- Pandavleni caves is protected site under Archaeological Survey of India.
- Other caves in the area are Karla Caves, Bhaja Caves, Patan Cave and Bedse Caves.

Nesher Ramla Homo

Context

- At the Israeli site of Nesher Ramla, where excavators have recovered a missing piece in the human evolution tale.

Findings

- Fossilised bones recovered from the site belong to a group of extinct humans who resided in the area 1,00,000 years ago.
- The excavators found pieces of skull, a complete jaw that is different from those found in humans of the period.
- Analysis showed they do not belong to either Homo Sapiens or Neanderthal.
- The species **is in between Neanderthals and Homo Sapiens**, a unique population never recognised before.
- Stone tools and remains of horses, fallow deer, and wild ox were also unearthed.
- The site also had burnt bones of animals that were butchered and eaten indicating that inhabitants of this group were hunter-gatherers.
- Excavators also found campfire sites matching the age of the bones and concluded that the residents were using

fire effectively.

- The campfire found in Ramal could be the oldest open-air intact campfire ever found.
- The group named, which has been named Nesher Ramla Homo, might have contributed to the Neanderthal evolution.
- This work shatters the simple picture of modern humans coming out of Africa and Neanderthals living in Europe.
- Ramla site could act as the missing pieces needed to complete the story of human evolution.
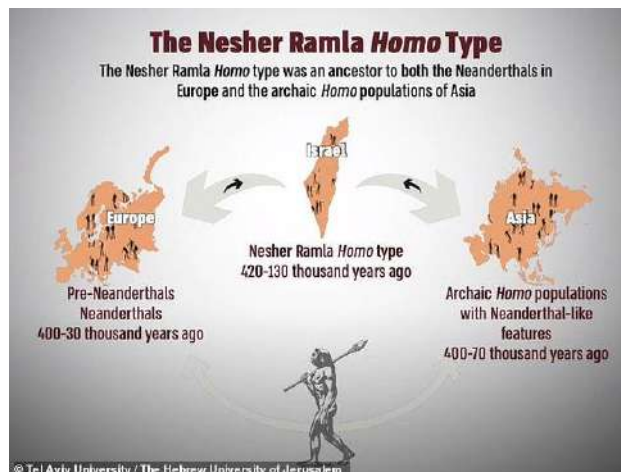
Bankim Chandra Chattopadhyay

Context

- PM pays homage to Rishi Bankim Chandra Chattopadhyay on his Jayanti.

About

- He was an Indian novelist, poet and journalist.
- He was the composer of Vande Mataram, originally in Sanskrit, personifying India as a mother goddess and inspiring activists during the Indian Independence Movement.
- He is known as Sahitya Samrat (Emperor of Literature) in Bengali.
- **Anandamath** (The Abbey of Bliss, 1882) is a political novel, which depicts a Sannyasi (Hindu ascetic) army fighting a British force. The book calls for the rise of Indian nationalism.
- **Some other works:** Durgeshnandini, Kapalkundala, Devi Chaudhurani etc

Sant Kabir Das

Context

- The Prime Minister paid tribute to Sant Kabir Das ji on his Jayanti.

About

- He was a 15th-century Indian mystic poet and saint, whose writings influenced Hinduism's Bhakti movement.
- His verses are found in Sikhism's scripture Guru Granth Sahib.
- He was strongly influenced by his teacher, the **Hindu bhakti leader Ramananda.**
- Kabir is known for being critical of religions.
- He questioned meaningless and unethical practices of all religions primarily the wrong practices in Hindu and Muslim religion.
- Kabir's legacy survives and continues through the Kabir panth ("Path of Kabir"), a religious community that recognises him as its founder and is one of the Sant Mat sects.
- Its members are known as Kabir panthis.
- He preached Bhakti or 'Devotion' through the medium of his 'Dohas'.
- He taught love and humanity to the world.

Rudreshwara (Ramappa) temple

Context

- The government has intensified its pitch for speeding up the process for recognition of the Rudreshwara (Ramappa) temple as world heritage site.

About

- It is also known as the **Ramalingeswara temple**, and is located in the state of **Telangana.**
- The temple is a Sivalayam, where Lord Ramalingeswara is worshipped.
- An inscription in the temple dates it to the year 1213 CE and says it was **built by a Kakatiya General Recherla Rudra Reddy**, during the period of the Kakatiya ruler Ganapati Deva.
- **Marco Polo**, during his visit to the Kakatiya Empire, called the temple "the brightest star in the galaxy of temples".
- The temple is named after the sculptor Ramappa, who built it, and is perhaps the only temple in India to be named after a craftsman who built it.
- The main structure is in reddish sandstone, but the columns round the outside have large brackets of black basalt.
- These are carved as mythical animals or female dancers or musicians.
- The Temple is included in the proposed UNESCO World Heritage Site "The Glorious Kakatiya Temples and Gateways", in 2019 on the "tentative list".

Tulu Language

Context

- Recently, a Twitter campaign demanding official language status to Tulu in Karnataka and Kerala received an overwhelming response.

About

- Tulu is a Dravidian language spoken mainly in two coastal districts Dakshina Kannada and Udupi of Karnataka and Kasaragod district of Kerala.
- As per the 2011 Census report, there are 18,46,427 Tulu-speaking people in India.
- Some scholars suggest Tulu is among the earliest Dravidian languages with a history of 2000 years.

Demand by Tulu speakers

- The Tulu speakers have been requesting the governments to give it official language status and include it in the eighth schedule to the Constitution.
- Assamese, Bengali, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Malayalam, Manipuri, Marathi, Nepali, Oriya, Punjabi, Sanskrit, Sindhi, Tamil, Telugu, Urdu, Bodo, Santhali, Maithili and Dogri are the 22 languages presently in the eighth schedule to the Constitution.

Tulu art, culture and cinema

- Tulu has a rich oral literature tradition with folk-song forms like paddana, and traditional folk theatre yakshagana.
- Tulu also has an active tradition of cinema with around 5 to 7 Tulu language movies produced a year.

Ramakrishna Mission

Context

- Vice-President of Ramakrishna Math and Mission Swami Shivamayananda died at a city hospital due to COVID-19 related complications.

About

- It is a Hindu religious and spiritual organization, which forms the core of a worldwide spiritual movement known as the **Ramakrishna Movement or the Vedanta Movement.**
- The mission is named after and inspired by the Indian saint Ramakrishna Paramahamsa and **founded by Ramakrishna's chief disciple Swami Vivekananda on 1 May 1897.**
- The organisation mainly propagates the Hindu philosophy of Vedanta–Advaita Vedanta and four yogic ideals–Jnana, bhakti, karma, and raja yoga.
- The mission bases its work on the principles of karma yoga, the principle of selfless work done with dedication to

God.

- Vivekananda was greatly influenced by his guru (teacher) Ramakrishna.

Rabab

Context

- Kashmir's youngest Rabab artist inspires youth to learn traditional instrument.

About Rabab

- Also known as the Kabuli Rabab, the lute-like musical instrument is the national instrument of Afghanistan, from where it made its way into India and was adopted by the people of Kashmir.
- It is believed to be the progenitor of other instruments in the subcontinent like the sarod and the sarangi.

Homo Longi

Context

- Scientists have said a more than 140,000-year-old skull found in northeastern China.
- It belongs to new ancient species of humans called Homo longi and have nicknamed it "Dragon Man".

Note: It was found at Harbin, north-east China, in 1933, but only came to the attention of scientists more recently.

Researchers had found another humanlike skull, nicknamed Peking Man, near Beijing just four years ago.

Findings

- The Harbin skull, belonged to a <u>male in his 50s</u> with a huge brain, deep-set eyes, thick brow ridges and a bulbous nose.

- Though his face was wide, it had flat, low cheekbones and his mouth was broad and the lower jaw is missing.
- His brain was about 7 per cent larger than the average brain of a living human.
- All his facial features made him resemble modern people more closely than other extinct members of the human family tree.
- The Harbin cranium presents a mosaic combination of primitive and derived characters setting itself apart from all the other previously named Homo species.
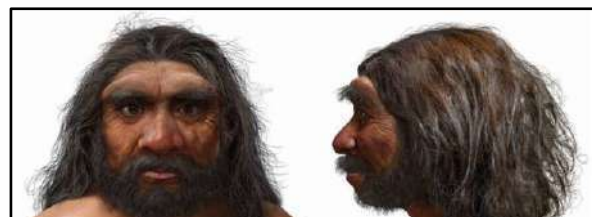
Habitat

- *Homo longi* was well adapted for harsh environments and would have been able to disperse throughout Asia.

- This population would have been hunter-gatherers, living off the land.
- Homo longi, and not the Neanderthals, were the extinct human species most closely related to our own kind.
- A number of experts do not agree that Dragon Man is a separate species.
- But many think that the find could help scientists reconstruct the human family tree and find how modern humans emerged.
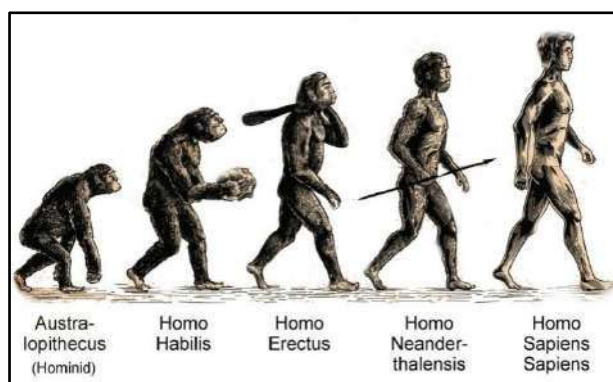
Ekambaranathar Temple

Context

- The Ekambaranathar temple has taken control of the Seetha Kingston School, located on the temple's property.

About

- It is a Hindu temple <u>dedicated to the deity Shiva</u>, located in the town of **Kanchipuram in Tamil Nadu.**
- The temple complex houses many halls; the most notable is the <u>thousand-pillared hall built during the</u>

Vijayanagar period.

- The temple finds mention in the classical Tamil Sangam literature dated 300 BCE like Manimegalai and Perumpāṇārruppaṭai.
- Initially temple was built by Pallavas.
- The existing structure then, was pulled down and <u>rebuilt by the later Chola Kings.</u>
- Adi Sankara, the 10th-century saint got Kanchipuram remodelled along with expansion of this temple along with Kamakshi Amman temple and Varadaraja Perumal Temple with the help of local rulers.
- The Vijayanagar kings, during the 15th century, also made lot of contributions to the temple.

GEOGRAPHY

Baihetan Dam

Context

- China operationalises world's second-biggest hydropower dam.

About

- The Baihetan Dam is a large hydroelectric dam **on the Jinsha River,** an upper stretch of the Yangtze River in Sichuan and Yunnan provinces, in the southwest of China.
- It is the third largest dam in China and the fourth in the world, in terms of dam volume.
- The facility will generate power by utilizing 16 turbines, each with a generating capacity of 1.0 GW, taking the generating capacity to 16,000 MW.
- In terms of generating capacity, it will be the second largest hydroelectric power plant in the world, after the Three Gorges Dam.
  - The Three Gorges Dam is a hydroelectric gravity dam that spans the Yangtze River, Hubei province, central China.
  - The Three Gorges Dam has been the <u>world's largest power station in terms of installed capacity (22,500 MW) since 2012.</u>

Umling La Pass

Context

- The first ever Solo Woman Motorcycle Expedition by MsKanchanUgursandi to Umling La Pass, Ladakh and back was also flagged off.

About

- It is one of the highest motorable roads in the world.
- Located in the Ladakh region of Jammu and Kashmir.
- Stretching to a distance of almost 86km, it **connects Chisumle and Demchok villages.**
- Both these villages lie in close proximity to the Indo-China border in the eastern sector.

National Disaster Management Authority (NDMA)

Context

- The Supreme Court pulled up the National Disaster Management Authority (NDMA), for "failing to perform its duty" and directed it to recommend ex gratia assistance for families of those who lost their loved ones to the COVID-19 pandemic.

NDMA

- **Parent body:** Ministry of Home Affairs.
- **Objective:**to lay down policies for disaster management.
- **Origin:** NDMA was established through the Disaster Management Act enacted by the Government of India in 2005.
- **Organization setup:** The Prime Minister is the ex-officio chairperson of the NDMA, who chairs a 9-member board.

- The remainder of the board consists of members nominated based on their expertise in areas such as, planning, infrastructure management, communications, meteorology etc.The day-to-day management of the agency is overseen by the office of the Vice Chair.

World's Fifth Ocean

Context

- For years, we have known that the world is home to four oceans, Atlantic, Pacific, Indian, and Arctic oceans.
- But now, National Geographic, one of the world's most prestigious mapmakers, has declared the presence of this fifth ocean, the Southern Ocean.

About

- The body of water that surrounds Antarctica and is known as the Southern Ocean, is our newest ocean in the earth.
- Since Antarctica and South America split 30 million years ago, this body of water has existed.
- The Southern Ocean, is the only ocean that "touches three other oceans and entirely encircling Antarctica.
- Its northernmost point is 60 degrees south latitude.
- The Antarctic Circumpolar Current, which formed 34 million years ago, also defines it.
- Around Antarctica, the current travels from west to east.
- It is regarded as the second-smallest of the five principal oceanic divisions.
- The maximum depth of the Southern Ocean, was surveyed by the **Five Deeps Expedition** in early February 2019.
- This deepest point in the Southern Ocean is called as**"Factorian Deep".**
- The IHO had recognized Southern Ocean in 1937 but repealed it in 1953.
- The National Geographic Society recognized the ocean officially in June 2021.

A fifth ocean

The National Geographic Society now recognizes the body of water that extends from Antarctica's coast to 60 degrees south latitude as the Southern Ocean, the world's fifth.

Sources: NOAA, National Geographic Society

MARK NOWLIN / THE SEATTLE TIMES
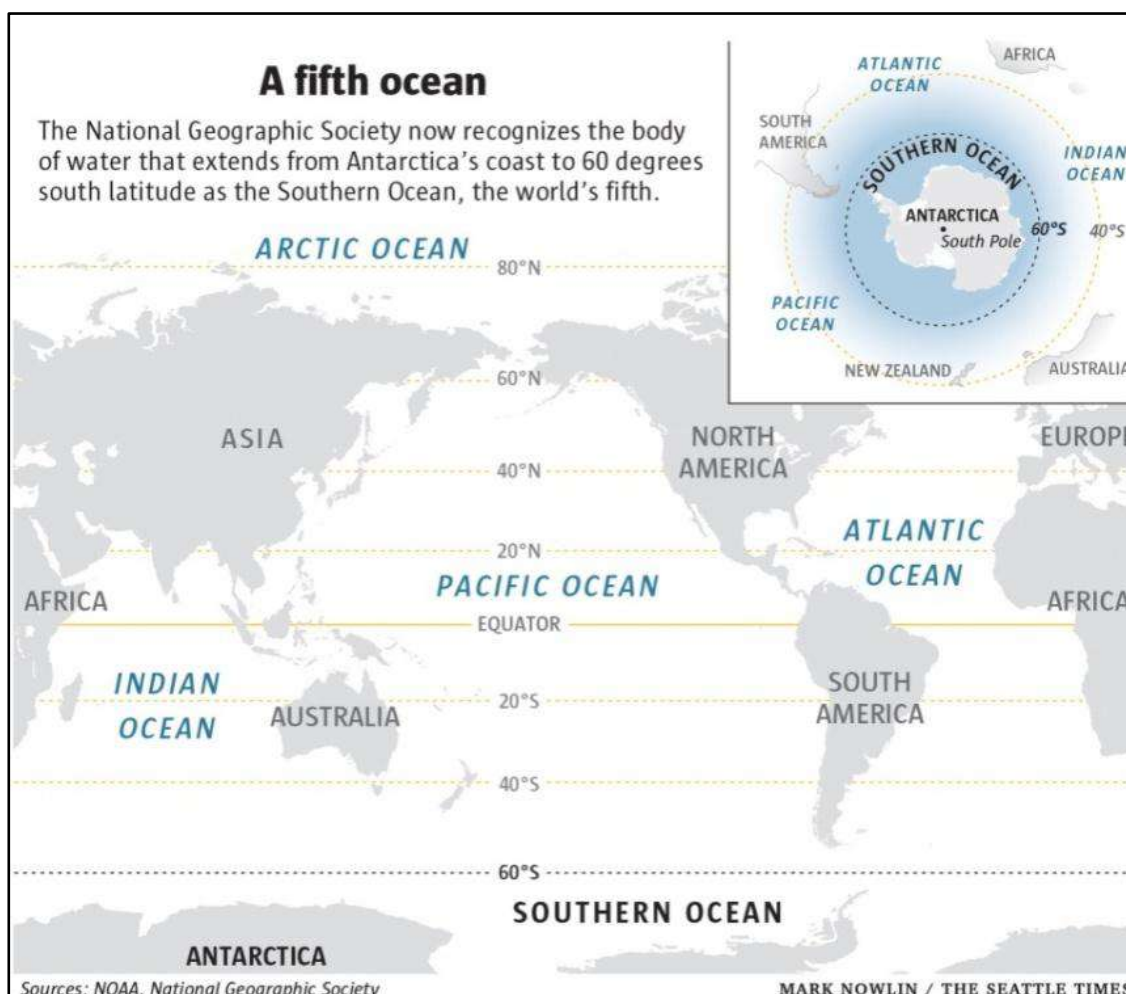
- The IHO was established in 1921 as the International Hydrographic Bureau (IHB). The present name was adopted in 1970.
- The International Hydrographic Organization (IHO) is an intergovernmental organization representing hydrography. It comprises of 94 Member States.
- A principal aim of the IHO is to ensure that the world's seas, oceans and navigable waters are properly surveyed and charted. The IHO enjoys **observer status at the United Nations.**

Black Sea

Context

- UK, Russia escalate war of words over Black Sea warship incident.

About

- The Black Sea is a marginal sea of the Atlantic Ocean lying between Europe and Asia.
- Countries bordering Black Sea are: Russia, Ukraine, Georgia, Turkey, Bulgaria and Romania.
- It is supplied by major rivers, principally the **Danube, Dnieper, and Don.**
- The Black Sea, is also known as the **Euxine Sea.**
- It is surrounded by the Pontic, Caucasus, and Crimean Mountains in the south, east and north respectively.

- Important cities along the coast include Istanbul, Odessa, Varna, Samsun, Sochi, Sevastopol, Constanţa, Trabzon, Novorossiysk, Burgas, Batumi, etc.
- The Black Sea ultimately drains into the Mediterranean Sea, via the Turkish Straits and the Aegean Sea.
- The Bosporus Strait connects it to the small Sea of Marmara which in turn is connected to the Aegean Sea via the Strait of the Dardanelles.
- To the north, the Black Sea is connected to the Sea of Azov by the Kerch Strait.
- Water in Black Sea is anoxic in nature (lack of oxygen)

IFC-IOR

Context

- Recently, UK's International Liaison Officer (ILO) joined the Indian Navy's Information Fusion Centre-Indian Ocean Region (IFC-IOR) in Gurugram.

About

- The Indian Navy's Information Management and Analysis Centre (IMAC) was operationalized in 2014.
- It is the nodal centre that links information from the high seas and Indian's coastline and island territories.
- The Information Fusion Centre – Indian Ocean region (IFC–IOR), was set up in the IMAC in 2018, as a regional information coordination body, that coordinates with 21 partner countries and 22 multi-national agencies.
- The need to set up such a surveillance and information management system was felt following the 2008 Mumbai attacks.
- IMAC tracks **only non-military shipping,** whereas the Directorate of Naval Operations tracks military vessels on another classified network.
- IOR hosts Liaison Officers from partner countries for better coordination and interaction.

- UK is the fifth country to post an ILO.
- The fact that more than 75% of the world's maritime trade and 50% of global oil consumption passes through the Indian Ocean Region proves the significance of IFC-IOR.

Saint Vincent and the Grenadines

Context

- The Union Cabinet, has approved an agreement between the Republic of India and Saint Vincent and the Grenadines for the exchange of information and assistance in collection with respect to taxes.

About

- Saint Vincent and the Grenadines is an <u>**island country in the Caribbean.**</u>
- It is composed of partially submerged volcanic mountains.
- Its largest volcano and the country's highest peak, La Soufrière, is active.

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Great Barrier Reef

Context

- Australia recently expressed its disappointment at a draft report of UNESCO which listed the Great Barrier Reef as being "in danger" over deterioration caused by climate change.

About

- The Great Barrier Reef is the world's largest coral reef system composed of over 2,900 individual reefs and 900 islands stretching for over 2,300 kilometers.
- The reef is located in the Coral Sea, off the coast of Queensland, Australia.
- The Great Barrier Reef can be seen from outer space and is the world's biggest single structure made by living organisms.
- It supports a wide diversity of life and was selected as a World Heritage Site in 1981.
- A large part of the reef is protected by the Great Barrier Reef Marine Park, which helps to limit the impact of human use, such as fishing and tourism.
- A 2020 study found over half of the reef's coral cover to have been lost between 1995 and 2017.
- The Great Barrier Reef is a distinct feature of the East Australian Cordillera division.
- It reaches from Torres Strait (between Bramble Cay, its northernmost island, and the south coast of Papua New Guinea) in the north to the unnamed passage between Lady Elliot Island (its southernmost island) and Fraser Island in the south.
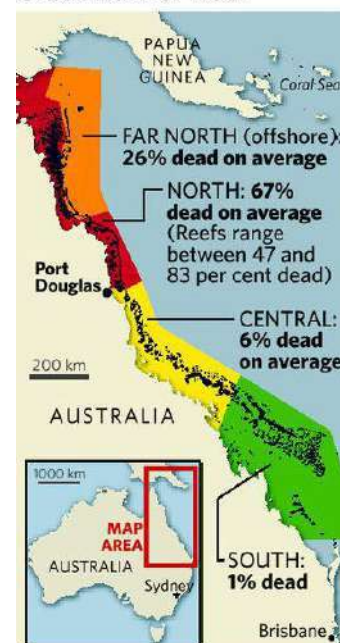
Lynetteholmen Island

Context

- The Danish parliament has approved the building of <u>**Lynetteholm,**</u> an artificial island off the coast of Copenhagen.

Details

- The artificial island in Copenhagen, Denmark will be about 3 sq. km (1.2 sq miles) in size.

- It will function as a protection against the future flooding in Copenhagen, the Capital of Denmark, as a result of rising sea levels.
- The artificial island will be built north of the trendy <u>Refshale Island</u> which is a former industrial area.

Sardar Sarovar Dam

Context

- Called the 'lifeline of Gujarat', the SardarSarovar Narmada Dam usually has no water for irrigation during summers.
- However, this year the dam had 122.72 metres with live storage of 1,711 million cubic metres in the month of June.

About

- The SardarSarovar Dam is a **concrete gravity dam** built on the Narmada river in Kevadiya, Gujarat.
- It is the second largest concrete dam in the world in terms of the volume of concrete used in its construction, after the Grand Coulee dam across River Columbia, US.
- Four states, Gujarat, Madhya Pradesh, Maharashtra and Rajasthan, receive water and electricity supply from the dam.

Narmada River

- 5th longest river in India
- The largest west-flowing river and largest flowing river of Madhya Pradesh.
- Flows through Chattisgarh, Madhya Pradesh, Maharashtra and Gujarat
- Rises from Amarkantak Plateau Madhya Pradesh.
- The basin is bounded on the north by the Vindhyas, on the east by the Maikala range, on the south by the Satpuras, and on the west by the Arabian Sea.
- Lies in the northern extremity of the Deccan plateau.
- Forms the traditional boundary between North India and South India and flows westwards over a length of 1,312 km before draining through the Gulf of Khambhat into the Arabian Sea
- One of only three major rivers in peninsular India that run from east to west (longest west flowing river), along with the Tapti River and the Mahi River.
- It is one of the rivers in India that flows in a rift valley, bordered by the Satpura and Vindhya ranges.
- As a rift valley river, the Narmada does not form a delta; Rift Valley Riversform estuaries.
- The other rivers which flow through rift valley include Damodar River in Chota Nagpur Plateau and Tapti.
- Important left tributaries of Narmada are:-Banjar, Kaveri, Tawa, Burhner, Sher, Shakkar
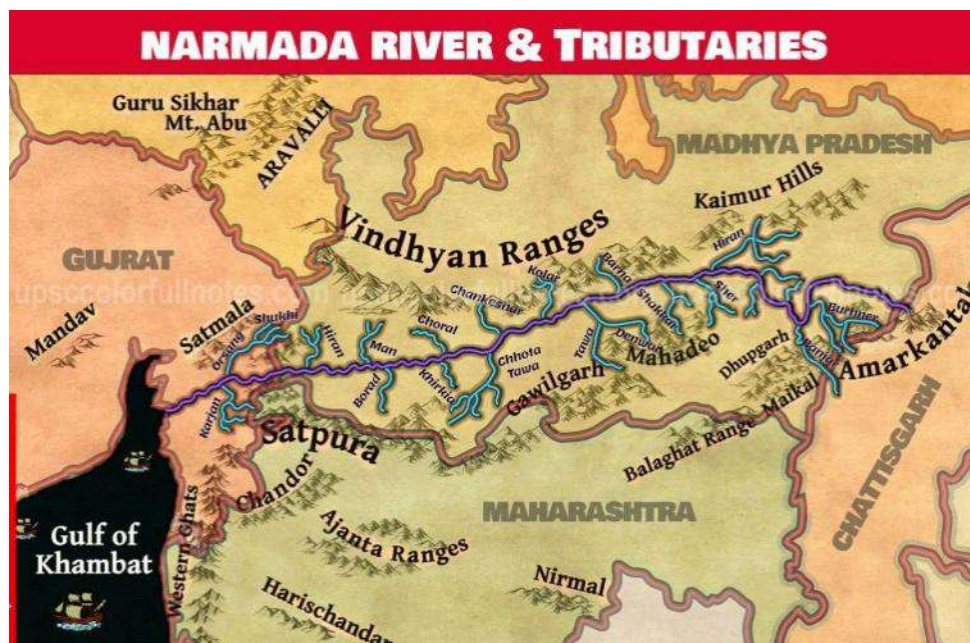
- Important right tributaries of Narmada are:-Uri, Hiran, Orsang, Kolar
- Major Projects on narmada: Bargi, Tawa, Indira Sagar, Omkareshwar, Maheshwar and SardarSarovar.

Addu Atoll

Context

- The Maldives has made no decision on opening an Indian consulate in its southern Addu Atoll - President Ibrahim Mohamed Solih.

About

- Addu Atoll, also known as Seenu Atoll, is the southernmost atoll of the Maldives.
- Addu Atoll, together with Fuvahmulah, located 40 km north of Addu Atoll, extend the Maldives into the Southern Hemisphere. Addu Atoll is located 540 km south of Malé, the country's capital.
- Addu City consists of the inhabited areas of Addu Atoll, namely the natural islands of Hulhudhoo, Meedhoo, Maradhoo, Feydhoo, and Hithadhoo.

Burkina faso

Context

- At least 160 killed in deadliest Burkina Faso attack since 2015 by Jihadists.

About

- Burkina Faso is a landlocked country in West Africa
- It is bordered by Mali to the northwest, Niger to the northeast, Benin to the southeast, Togo and Ghana to the south, and the Ivory Coast to the southwest.
- Previously called Republic of Upper Volta (1958–1984), it was renamed "Burkina Faso" on 4 August 1984.
- Due to French colonialism, the country's official language of government and business is French.
- However, only 15% of the population actually speaks French on a regular basis.

- There are 59 native languages spoken in Burkina, with the most common language, Moore, spoken by roughly 50% of Burkinabé.

Lamu Port

Context

- Kenya recently launched its newest mega infrastructure project, the Lamu port.

About

- It is a part of an ambitious transport corridor between Lamu (a small archipelago north of Mombasa in Kenya), South Sudan and Ethiopia.
- The port is part of the wider US $23 billion Lamu Port South Sudan-Ethiopia Transport (LAPSSET) corridor.
- The Lamu port is going to be Kenya's second deep-water port after Mombasa.
- The principal reason to set up a second port was to reduce the economic dependency on the port of Mombasa, which was coming under increasing strain due to rising business volumes and demand.
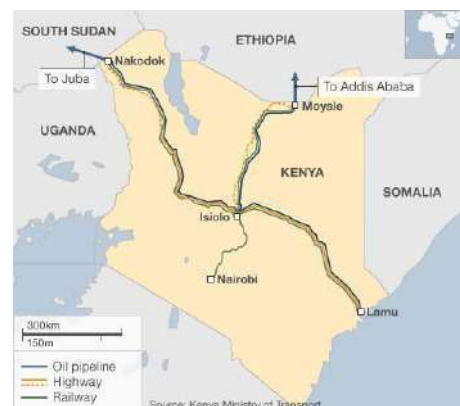
Dagmara Hydroelectric Project

Context

- A MoU for the Bihar's mega Dagmara hydroelectric project was initiated.

About

- The project is located on Kosiriver.
- It is a Run-of-the-River scheme.
- Run-of-river hydro projects use the natural downward flow of rivers and micro turbine generators to capture the kinetic energy carried by water.
- The project will have the total capacity of generating 130 MW energy.
- It is the largest hydropower project of Bihar.

Significance

- Hydropower is very important in the background of climate change and in shift from fossil to non-fossil fuel for future generation.
- It will be a landmark project in the power sector scenario of Bihar as far as green power is concerned.
- It will enhance the socio-economic and infrastructure development and create employment opportunities.
- The project will bring all round progress and development in the state.

Kosi River

- The Kosi is a trans-boundary river which flows through Tibet, Nepal and India.
- Source – Tibet. **Major tributaries:** Sun Kosi, Arun and Tamur
- It is known as the "Sorrow of Bihar" as the annual floods affect fertile agricultural lands tremendously.
- The Kosi carries the maximum amount of silt and sand after the Brahmaputra in India.
- North of the Chatra Gorge onwards, the Koshi River is also known as Saptakoshi for its seven upper tributaries.

Aravali Range

Context

- The Supreme Court recently, ordered eviction of thousands of slum dwellers encroaching on Aravali forest area in Haryana's Faridabad district.

About

- The Aravalli mountain range that spans four states—**Gujarat, Rajasthan, Haryana and Delhi**—was never continuous, but mining and construction activities have made it even more broken.
- They are aligned in north-east to south-west direction.
- They run for about 670 km between Delhi and Palanpur in Gujarat.
- Its general elevation is only 400-600 m, with few hills well above 1,000 m.
- At the south-west extremity the range rises to over 1,000 m.
- At this place, Mt. Abu (1,158 m), a small hilly block, is separated from the main range by the valley of the Banas.
- Guru Sikhar (1,722 m), the highest peak, is situated inMt. Abu.
- PipliGhat, Dewair and Desuri passes run through it.
- They are one of the oldest fold mountains of the world and the **oldest in India having its origin in the Proterozoic Era.**.
- The range is conspicuous in Rajasthan (continuous range south of Ajmer where it rises to 900 m.)
- But it becomes less distinct in Haryana and Delhi.
- One branch of the Aravalis extends to the Lakshadweep Archipelago through the Gulf of Khambhat and the other into Andhra Pradesh and Karnataka.

GS-II
POLITY

Attorney General of India

Context

- The central government has extended the term of K.K. Venugopal as Attorney General (AG) for one more year.
- This is the second time the Centre has extended his tenure. Venugopal received his first extension of term in 2020.

About Attorney General of India

Appointment	President of India
Constitution	• Article 76 deals with Attorney General of India.
Qualification	• Eligible to be appointed as Judge of the Supreme Court
Removal	• No fixed Procedure in the constitution • No fixed term in the constitution • Holds office during the pleasure of President.
Remuneration	• Not Fixed by Constitution • Fixed by the President
Functions	• Right of audience in all courts in the territory of India. • Right to Speak and take part in proceedings of the both the houses and any committee of the Parliament.

	• He can't vote while taking the part.
Remarks	• Enjoys all privileges and immunities of the member of Parliament. • Can Practise privately. • Not a government servant.

Recusal of Judges

Context

- Recently, two Supreme Court (SC) judges have recused themselves from hearing cases relating to West Bengal.

Decision & Process of Recusal

- The decision to recuse generally comes from the judge himself as it rests on the conscience and discretion of the judge to disclose any potential conflict of interest.
- Some judges orally convey to the lawyers involved in the case their reasons for recusal, many do not. Some explain the reasons in their order.

Recusal of Judges in Past SC cases:

INSTANCE OF RECUSAL OF SC JUDGES

March 8, 2016: Justice J Chelameswar recused from a case pertaining to Bangalore blasts accused Abdul Nazir Maudany in Babri Masjid case

March 9, 2016: Justice AR Dave's bench said it was unable to hear activist Teesta's anticipatory bail plea and referred it to CJI for listing it before another bench

March 10, 2016: Justice VG Gowda recused from hearing CBI's plea challenging May 2010 Allahabad HC verdict dropping criminal conspiracy charge against BJP leaders LK Advani

April 28, 2011: Justices DK Jain and HL Dattu recused from hearing then Sikkim HC Chief Justice PD Dinakaran's petition seeking a stay on Rajya Sabha-appointed inquiry panel against him

March 2, 2012: Bench of justices HL Dattu and CK Prasad chose not to hear a petition challenging validity of the USD 8.5 million Cairn Energy-Vedanta deal.

- In some circumstances, lawyers or parties in the case bring it up before the judge. Once a request is made for recusal, the decision to recuse or not rests with the judge.
- While there are some instances where judges have recused even if they do not see a conflict but only because such an apprehension was cast, there have also been several cases where judges have refused to withdraw from a case.
- If a judge recuses, the case is listed before the Chief Justice for allotment to a fresh Bench.

About Judges Recusal

- Judges recusal is the act of abstaining from participation in an official action such as a legal proceeding due to a conflict of interest of the presiding court official or administrative officer.

General Grounds for Recusal

- Interest in the subject matter, or relationship with someone who is interested in it.
- Background or experience, such as the judge's prior work as a lawyer.
- Personal knowledge about the parties or the facts of the case.
- Ex parte communications with lawyers or non-lawyers.
- Rulings, comments or conduct.
- No person should be a judge in her own cause.
- In some cases, prejudice is presumed.

Reasons behind Recusal

- Free from disabling conflicts of interest
- To dispense justice fairly and fearlessly
- Deliver justice, "without fear or favour, affection or ill-will".
- It underpins twin pillars of independence and impartiality.

Digital News Report -2021

Context

- The Reuters Institute Digital News Report, 2021 released.
- The Asian College of Journalism (ACJ) in Chennai collaborated with the Reuters Institute for the Study of Journalism (RISJ) at the University of Oxford on the report.

India's performance

- India ranked 31 out of 46 countries on level of trust in news.
- Only 38% of the respondents from India said they trust news overall.

- This is the first time India features in the main report.
- The survey shows **India is one of the strongest mobile-focused markets**, with 73% of the respondents using smartphones to access news.
- 82% of the respondents in India said they source news online, including on social media, with WhatsApp and YouTube being the top go-to platforms.
- Concerns of rampant misinformation on these platforms were also high.
- The ACJ provided **support in identifying news brands and other specific details relevant for the Indian market in the survey questionnaire**, verifying Hindi translation of the questionnaire, and contextualising the main findings for India in its country profile.

Key highlights

- Finland had the highest levels of overall trust in news (65%) while the U.S. had the lowest levels of trust (29%).
- Print media and government broadcasters scorehigh on trust levels in the survey.
- However, print media suffered heavily from the economic slowdown due to the pandemic with decrease in advertisement revenues and circulation, resulting in job losses and salary cuts.
- This year's report focuses on "trust in news, the pandemic induced economic pressure on news publishers, misinformation and COVID-19 and other aspects of digital news consumption among the public.

GOVERNANCE

Delimitation Exercise in Jammu & Kashmir

Context

- For Assembly elections to be held in the new UT, delimitation of seats will be necessary. Delimitation is crucial for kick-starting the political process in J&K.

About Delimitation

- Delimitation is the act of redrawing boundaries of an Assembly or LokSabha seat to represent changes in population over time.
- This exercise is carried out by a Delimitation Commission, whose orders have the force of law and cannot be questioned before any court.
- The objective is to **redraw boundaries** (based on the data of the last Census) in a way so that the population of all seats, as far as practicable, be the same throughout the State.
- Aside from changing the limits of a constituency, the process may result in change in the number of seats in a state.

Delimitation in J & K

- Delimitation exercises in J&K in the past have been slightly different from those in the rest of the country because of the region's special status — which was scrapped by the Centre in August 2019.
- Until then, delimitation of LokSabha seats in J&K was governed by the Constitution of India, but the delimitation of the state's Assembly seats was governed by the Jammu and Kashmir Constitution and Jammu and Kashmir Representation of the People Act, 1957.
- Assembly seats in J&K were delimited **in 1963, 1973 and 1995**. The last exercise was conducted by the Justice (retired) **K K Gupta Commission** when the state was under President's Rule and was based on the 1981 census, which formed the basis of the state elections in 1996.
- There **was no census in the state in 1991 and no Delimitation Commission** was set up by the state government after the 2001 census as the J&K Assembly passed a law putting a freeze on the fresh delimitation of seats until 2026.
- **This freeze was upheld by the Supreme Court. The J&K Assembly, at that time, had 87 seats** — 46 in Kashmir, 37 in Jammu and 4 in Ladakh. Twenty-four more seats are reserved for Pakistan-occupied Kashmir.

Provisions related to Delimitation

Constitutional and Legal Provisions	• Under article 82, Parliament enacts a law for delimitation after every census. • Under article 170, States are divided into territorial constituencies as per the delimitation act. (Note: State Cant make the delimitation act.)
History of Delimiation	• First delimitation: 1950-51 with the help of election commission • First Delimitation act: 1952 • 1981 and 1991 census resulted into no delimitation act.
Delimitation Commission	• Set up by President of India • Works in collaboration with Election commission of India.
Structure of Commission	• Retired Supreme Court Judge • Chief Election Commissioner • Respective state election commissioner
Functions of Commission	• Decide the boundaries of constituencies in such manner to make population nearly equal for all constituencies. • Identify seats for SC and ST wherever their population is large.
Powers	• Its orders have the power of law and cant be questioned in the court of law. • These orders come into force on a date to be specified by the President of India. • The copies of its orders are laid before the House of the People and the State Legislative Assembly concerned, but no modifications are permissible therein by them.

Indian Certification of Medical Devices (ICMED) Plus Scheme

Context

• Quality Council of India (QCI) launches Indian Certification of Medical Devices (ICMED) Plus Scheme.

ICMED 13485 PLUS

• The Quality Council of India (QCI) and the Association of Indian Manufacturers of Medical Devices (AiMeD) have added further features to the ICMED the Scheme that had been launched for Certification of Medical Devices in 2016.

• The ICMED 13485 PLUS, as the new scheme will undertake verification of the quality, safety and efficacy of medical devices.

• ICMED 13485 Plus has been designed **to integrate the Quality Management System components and product related quality validation processes** through witness testing of products with reference to the defined product standards and specifications.

• This is the first scheme around the world in which quality management systems along with product certification standards are integrated with regulatory requirements.

• This scheme will be an end to end quality assurance scheme for the medical devices sector in India.

• This scheme provides the much-needed institutional mechanism for assuring the product quality and safety.

• It will assist the procurement agencies to tackle the challenges relating to the **menace of counterfeit products and fake certification.**

• This will also help in eliminating the circulation and use of sub-standard medical products or devices of doubtful origin that could prove to be serious health hazards.

About The Quality Council of India

• It is an autonomous body set up by the **Ministry of Commerce and Industry**, Government of India jointly with the Indian Industry represented by the three premier industry associations i.e. Associated Chambers of Commerce and Industry of India (ASSOCHAM), Confederation of Indian Industry (CII) and Federation of Indian Chambers of Commerce and Industry (FICCI), to **establish and operate national accreditation structure and promote quality through National Quality Campaign**.

• Quality Council of India (QCI) is registered as a **non-profit society** with its own Memorandum of Association and is governed by a Council with **equal representations of government, industry and consumers.**

• The Council plays a pivotal role at the national level in propagating, adoption and adherence to quality standards

in all important spheres of activities including education, healthcare, environment protection, governance, social sectors, infrastructure sector and such other areas of organized activities that have significant bearing in improving the quality of life and wellbeing of the citizens of India.

World Giving Index 2021

Context

- India emerges as 14th most charitable country in the World.

World Giving Index 2021

- WGI is a global survey, which has interviewed more than 1.6 million people since 2009.
- It asks each of them three questions: have they helped a stranger, given money, or volunteered for a good cause over the past month.

Released by

- The **Charities Aid Foundation's (CAF),** this year's survey highlights the impact of lockdowns on charitable giving.

Key findings of the report

- India **is 14th most charitable country**. India is now in the Top 20 most generous countries in the world. This is up from the 10-year global rank of 82.
- Australia and New Zealand, maintained their top 10 rankings.
- Communities around the **world mobilised to help fellow citizens during the pandemic**, resulting in the highest 'helped a stranger' figures since 2009.
- The improvement **in India is seen across all the age groups and amongst both men and women**. 61 per cent of Indians helped strangers; 34 per cent volunteered; and 36 per cent donated money.

International Labour Organisation

Context

- India completed its tenure as Chair of Governing Body of International Labour Organization after holding the position for the period October 2020- June 2021.
- India had assumed the Chairmanship of the Governing Body of International Labour Organization after a gap of 35 years.
- During India's Chairmanship, the sessions of the Governing Body held in October 2020 and March 2021 and the 109th session of the International Labour Conference held in June 2021 were conducted through virtual mode.

About ILO

- The International Labour Organization (ILO) is a United Nations agency whose mandate is to advance social and economic justice through setting international labour standards.
- Founded in 1919 under the League of Nations, it is the first and oldest specialised agency of the UN.
- The ILO has 187 member states: 186 out of 193 UN member states plus the Cook Islands.
- It is headquartered in Geneva, Switzerland.
- With its focus on international development, **it is a member of the United Nations Development Group, a coalition of UN organization** aimed at helping meet the Sustainable Development Goals.
- **Within the UN system the organization has a unique tripartite structure: all standards,** policies, and programmes require discussion and approval from the representatives of governments, employers, and workers.

Mission Karamyogi

Context

- Recently, a **three-member task force** has been formed to help the government in bringing major bureaucratic reforms through its ambitious **"Mission Karmayogi".**

Background

- Capacity of Civil Services plays a vital role in rendering a wide variety of services, implementing welfare programs and performing core governance functions.

Salient Features

- **Mission Karmayogi aims to prepare the Indian Civil Servant for the future by making him more creative**, constructive, imaginative, innovative, proactive, professional, progressive, energetic, enabling, transparent and technology-enabled. Empowered with specific role-competencies, the civil servant will be able to ensure efficient service delivery of the highest quality standards.

The core guiding principles of the Programme will be

- Supporting Transition from 'Rules based' to 'Roles based' HR Management.
- Aligning work allocation of civil servants by matching their competencies to the requirements of the post.
- Emphasize on 'on-site learning' to complement the 'off-site' learning.
- Create an ecosystem of shared training infrastructure.
- Calibrate all Civil Service positions to a Framework of Roles, Activities and Competencies approach.
- Opportunity to continuously build and strengthen Behavioural, Functional and Domain Competencies.
- Encourage and partner with the best-in-class learning content creators
- Enable **all the Central Ministries/Departments to invest their resources towards co-creation and sharing** the common ecosystem of learning through an annual financial subscription for every employee.

Agenda

- Prescribe Annual Capacity Building Plan for all departments and services
- Monitor and implementation of Capacity Building Plan
- Massive capacity building initiative to ensure efficient service delivery
- To promote technology-driven learning pedagogy
- **To strengthen common foundations** and remove the departmental silos
- Setting benchmarks in learning for public servants
- Democratization of learning to cover all categories

Six Pillars of the programme

- Policy Framework
- Institutional Framework
- Competency Framework
- Digital Learning Framework iGOT-Karmayogi
- The Electronic Human Resource Management System
- The Monitoring and Evaluation Framework

Institutional framework

- Prime Minister's Public Human Resources (HR) Council
- Capacity Building Commission
- Special Purpose Vehicle for owning and operating the digital assets and technological platform for online training
- Coordination Unit headed by the Cabinet Secretary.

Financial implications

- To cover around 46 lakh, Central employees, a sum of Rs.510.86 crore will be spent over 5 years from 2020-21 to 2024-25.
- The expenditure is partly funded by multilateral assistance to the tune of USD 50 million.
- A wholly owned Special Purpose Vehicle (SPV) for NPCSCB will be set up under Section 8 of the Companies Act, 2013.
- The SPV will be a "not-for-profit" company and will own and manage iGOT-Karmayogi platform.

Project O₂ for India

Context

- 'Project O2 for India' of the Office of Principal Scientific Adviser, Government of India, is to enable **stakeholders working to augment the country's ability to meet this rise in demand** for medical oxygen in the wake of the second wave of the covid pandemic.

Action in Project O$_2$

- Under Project O$_2$ for India, a National Consortium of Oxygen is:
  - enabling the national level supply of critical raw materials such as zeolites,
  - setting up of small oxygen plants,
  - manufacturing compressors,
  - final products, i.e., oxygen plants, concentrators, and ventilators.
- The consortium is not only looking forward to providing immediate to short-term relief but also working to strengthen the manufacturing ecosystem for long-term preparedness.
- The Office of the Principal Scientific Adviser is involved in an effort aimed at raising COVID-19 response funds from private sector companies, donor organizations, and individuals to strengthen India's fight against COVID-19.
- These **funds will be used for producing medical oxygen for various** health facilities in India through an initiative called 'Project O$_2$'.

SDG India Index 2020-21

Context

- Kerala retains top rank in NitiAayog's SDG India Index 2020-21, Bihar worst performer.

About the Index

- The Index for Sustainable Development Goals (SDGs) evaluates progress of states and union territories on social, economic and environmental parameters.
- It is a rare data-driven initiative to

rank our states and union territories by computing a composite index on the SDGs.
- **First launched in December 2018, the index has become the primary tool for monitoring progress on the SDGs** in the country and has simultaneously fostered competition among the states and union territories by ranking them on the global goals.
- The index, developed in collaboration with the United Nations in India.
- It **measures the progress at the national and sub-national level in the country's journey** towards meeting the global goals and targets and has been successful as an advocacy tool to propagate the messages of sustainability, resilience, and partnerships, as well.
- From covering 13 goals, 39 targets, and 62 indicators in the first edition in 2018-19 to 17 goals, 54 targets and 100 indicators in the second; this third edition of the index covers 17 goals, 70 targets, and 115 indicators.

Result

- Kerala retained its rank as the top state with a score of 75. Both Himachal Pradesh and Tamil Nadu took the second spot with a score of 74.
- Bihar, Jharkhand and Assam were the worst performing States in this year's India index.

About SDG

- The SDGs, constituted through an unprecedented consultative process, have 17 goals and 169 related targets to be

achieved by 2030.

- The SDGs are an ambitious commitment by world leaders which set out a universal and an unprecedented agenda which embraces economic, environmental and social aspects of the wellbeing of societies.

National Human Rights Commission

Context

- President formally appointed Justice Arun Kumar Mishra as the chairman of the National Human Rights Commission (NHRC).

About National Human Rights Commission

- It 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".

Functions of NHRC

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 working 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.

Composition

- The NHRC consists of: The Chairman and Five members (excluding the ex-officio members)
- A Chairperson, who has been a Chief Justice of India or a Judge of the Supreme Court.
- **One member who is, or has been, a Judge of the Supreme Court of India** , or, One member who is, or has been, the Chief Justice of a High Court.
- **Three Members, out of which at least one shall be a woman** to be appointed from amongst persons having knowledge of, or practical experience in, matters relating to human rights.
- In addition, the Chairpersons of National Commissions viz., National Commission for Scheduled Castes, National Commission for Scheduled Tribes, National Commission for Women , National Commission for Minorities, National Commission for Backward Classes, National Commission for Protection of Child Rights; and the Chief Commissioner for Persons with Disabilities serve as ex officio members.
- The **sitting Judge of the Supreme Court or sitting Chief Justice of any High Court c**an be appointed only after the consultation with the Chief Justice of Supreme Court.

A Model Panchayat Citizens Charter

Context

- Union Minister of Rural Development, Agriculture and Farmers Welfare &Panchayati releases A Model

Panchayat Citizens Charter

- **Aim of establishing a citizen charter is to provide services to the** people in a time bound manner, redressing their grievances and improving their lives
- It is a framework for delivery of the services across the 29 sectors, aligning actions with localised Sustainable Development Goals (SDGs) as prepared by Ministry of Panchayati Raj (MoPR) in collaboration with National Institute of Rural Development &Panchayati Raj (NIRDPR).

The Citizen Charter would ensure

- transparent and effective delivery of public services for sustainable development and
- enhanced citizen service experiences
- **deepening inclusive and accountable Local Self Governments** by incorporating diverse views while designing and delivering services.
- The aim of **establishing a Citizen charter is to provide services to the people** in a time bound manner, redressing their grievances and improving their lives.
- This **will help in making the citizens aware of their rights on the one hand**, and to make the Panchayats and their elected representatives directly accountable to the people, on the other hand.
- It is **expected that the Panchayats will utilise this framework to draw up a Citizens Charter** and adopt it through a resolution of the Gram Sabha by 15th August, 2021. States were accordingly requested to draw up a timebound plan of action.
- The basic objective of the **Gram Panchayat Citizen Charter is to empower the citizens in relation to public services and to improve the quality** of services without any prejudice, and in accordance with the expectations of the citizens.

Panchayats

- It constitute the third tier of government in the rural areas and represents the first level of Government interaction for over 60 per cent of the Indian populace.
- Panchayats are responsible for delivery of basic services as enshrined under article 243G of the Constitution of India, specifically in the areas of Health & Sanitation, Education, Nutrition, Drinking Water.

SOCIAL JUSTICE

M-Yoga App

Context

- Prime Minister launched M-Yoga App on 7th International Day of Yoga 2021.

M-Yoga Mobile App

- GoI in collaboration with WHO has developed M-Yoga Mobile App
- M-Yoga app will provide many videos of Yoga training and practice based on common Yoga protocol in many languages.
- M-Yoga app will help in spreading Yoga world over and will contribute to the efforts of 'One World, One Health'.
- It is also a great example of the fusion of modern technology and ancient science.
- This mobile app will be immensely helpful in the promotion of Yoga and wellness among people around the world, especially during the ongoing pandemic.
- It will play an instrumental role in re-rehabilitation of the health of the Covid patients who have recovered from Covid-19

Background

- The Ministry of AYUSH and the World Health Organization (WHO) had jointly undertaken a project in mid 2019, focussingon mobile-Yoga.
- It envisaged the concept of the 'Be Healthy, Be Mobile' (BHBM) under the United Nations Sustainable Development Goals to achieve Universal Health Coverage by 2030.
- Be Healthy, Be Mobile (BHBM) initiative is a global partnership led by WHO which supports the scale up of mobile health (m-Health) technology within the scope of the National Health system to combat non-

communicable diseases (NCDs).

The m-Yoga project focused on four areas

- Common Yoga Protocol for GeneralWellness;
- Yoga for mental health and resilience;
- Yoga for Adolescents; and
- Yoga for pre - Diabetics.

NISHTHA Programme

Context

- Ministry of Tribal Affairs and NCERT come together on a joint mission for NISHTHA Capacity Building Programme for Eklavya Model Residential Schools (EMRSs) Teachers and Principals.

NISHTHA-National initiative for School Heads' and Teachers' Holistic Advancement Program

- It is a national flagship program of NCERT.
- The capacity building program is aimed to build competencies among teachers and school principals and Improving Quality of School Education through Integrated Teacher Training.
- It affirms the **National Education Policy** (NEP-2020) recommendation of "Providing In-service continuous professional development, as these will be strengthened and substantially expanded to meet the needs of enriched teaching-learning processes for quality education."
- The Department of School Education and Literacy has launched a National Mission to improve learning outcomes at the elementary level through an Integrated Teacher Training Programme called NISHTHA under the **Centrally Sponsored Scheme of SamagraShiksha in 2109-20.**
- NISHTHA is a **capacity building programme for "Improving Quality of School Education through Integrated Teacher** Training". It aims to build competencies among all the teachers and school principals at the elementary stage.
- NISHTHA is the world's largest teachers' training programme of its kind.
- The basic objective **of this massive training programme is to motivate and equip teachers** to encourage and foster critical thinking in students.
- The initiative is first of its kind wherein standardized training modules are developed at national level for all States and UTs.

Objectives

- Improvement in learning outcomes of the students.
- Creation of an enabling and enriching inclusive classroom environment
- Teachers become alert and responsive to the social, emotional and psychological needs of students as first-level counselors.
- Teachers are trained to use Art as pedagogy leading to increased creativity and innovation among students.
- Teachers are trained to develop and strengthen the personal-social qualities of students for their holistic development.
- Creation of a healthy and safe school environment.
- Integration of ICT in teaching-learning and assessment.
- Developing a stress-free School-Based Assessment focused on the development of learning competencies.
- Teachers adopt Activity Based Learning and move away from rote learning to competency-based learning.
- Teachers and School heads to become aware of new initiatives in school education.
- Transformation of the Heads of Schools into providing academic and administrative leadership for the schools for fostering new initiatives.

"Vital Statistics of India Based on the Civil Registration System" report

Context

- The level of registration of births and deaths in the country improved in 2019, according to the "Vital Statistics of India Based on The Civil Registration System" report.

Key highlights of the report

Birth registration

- The report states that the level of birth registration increased from 87.8% in 2018 to 92.7% in 2019; and death registrations went up from 84.6% to 92% during the period.
- While 14 States/Union Territories achieved 100% level of birth registrations, 19 States/Union Territories achieved the same level in cases of death.

Sex ratio at birth

- Based on the information received from 32 States/Union Territories, the share of institutional births in the total registered births was 81.2%.
- The number of registered births increased to 2.48 crore in 2019 from 2.33 crore in 2018. The share of male and female was 52.1% and 47.9%.
- In the case of registration of births within the prescribed period of 21 days, 15 States/Union Territories achieved more than 90% registration.

Birth, death registrations up in 2019

- The highest sex ratio at birth (SRB) based on registered events was reported by Arunachal Pradesh (1,024), followed by Nagaland (1,001) Mizoram (975) and Andaman & Nicobar Islands (965).
- The lowest SRB was reported by Gujarat (901), Assam (903) and Madhya Pradesh (905), followed by Jammu & Kashmir (909).
- The number of registered deaths increased from 69.5 lakh in 2018 to 76.4 lakh in 2019. The share of male and female was 59.6% and 40.4%.
- Based on the information received from 31 States/Union Territories, the share of institutional deaths in total registered deaths was 32.1%.

Infant deaths

- Eleven States/Union Territories achieved more than 90% registration of deaths within the prescribed period of 21 days.
- In the case of registration of infant deaths, the share of urban area was 75.5% compared to 24.5% in rural areas.
- In the north-east, Arunachal Pradesh reported 100% registration of births, but only 38.6% of deaths. Nagaland also registered 100% births, but just 30% deaths, while Manipur recorded 67.7% births and only 21.4% deaths.
- In Sikkim, there was 100% registration of deaths, but 61.2% registration of births.

Full registration

- However, Mizoram and Tripura reported 100% registration of both births and deaths.
- Meghalaya had 100% registration of births and 97.6% registration of deaths, while Assam reported 100% registration of births and 74% registration of deaths.
- In Bihar and Jharkhand, the levels of registration of births were 89.3% and 84.3% and the levels of registration of deaths were 51.6% and 58.8%. In Daman & Diu, the figures were 50.7% and 61%.
- Listing the limitations, the report said the level of registration of States/Union Territories and India level presented in the report was arrived at using the mid-year projected population of the respective States/Union Territories of 2011-2019 based on 2011 census (Report of the Technical Group on Population Projections, July 2020, National Commission on Population, Ministry of Health & Family Welfare) and, therefore, was not comparable with rates presented in previous reports.

Incomplete data

- The level of registration was arrived at using Sample Registration System Rates for 2018 as the survey for 2019, which was scheduled for 2020, could not be completed due to the COVID-19 pandemic.
- Besides, some States/Union Territories submitted incomplete or partial data, which was not included.

"One Nation One Standard" Mission

Context

- RDSO (Research Design & Standards Organization) becomes the FIRST Institution to be declared SDO under one "One Nation One Standard" mission on BIS (Bureau of Indian Standards)

"One Nation One Standard" mission

- It is an initiative of two organizations under GOI.
- It is going to set a template for all the rest of leading research and standard development organizations in the country to follow and adapt World Class Standards.
- To attain " Nation One Standard" vision of Govt. of India, Bureau of Indian Standards (BIS), the National Standards Body, has launched a scheme which provides for "Recognition of SDO".
- Through this scheme, BIS aims at aggregating and integrating the existing capabilities and dedicated domain specific expertise available with various organizations in the country engaged in standards development in their specific sectors, and enable convergence of all standard development activities in the country resulting in "One National Standard for One Subject".
- The onus of complying with the terms and conditions, which entail conformance to the established Six principles of Standardization with greater emphasis on maintaining Transparency, Openness, Impartiality, Effectiveness, Coherence and Development Dimension, in the process of Standard making, will improve the overall confidence and trust of Industry and Technology Developers in the standards setting body.
- It will also help in harmonizing the standardization activity thereby providing opportunity for greater participation of all stakeholders in formulation & implementation of National Standards and creating in the long run, a Brand India identity for quality of product manufactured inter the country.
- Participatory approach to Development of standards involving all stake holders in the process of standard making from the very early stages is set to reduce the time between development of standards and their ground adaptation or user utilisation.
- The initiative set to usher in more faster transition from development of technology & innovation stage to actual use on ground.

SAGE Initiative and SAGE portal

Context

- The **Minister of Social Justice and Empowerment, virtually** launched the SAGE (Seniorcare Aging Growth Engine) initiative and SAGE portal for elderly persons

SAGE portal

- It will be a "one-stop access" of elderly care products and services by credible start-ups.
- The SAGE portal will be opened for applications from 5th June, 2021 onwards.
- The start-ups will be selected on the basis of innovative products and services, which they should be able to provide across sectors such as health, housing, care centers, apart from technological access linked to finances, food and wealth management, and legal guidance.

Need

- As number of elderly people is steadily increasing in our country, so there is a need to keep in **mind that the elderly should remain happy, healthy, and financially and physically** active for which a Senior Citizen Welfare Fund was started in 2016.
- India's **elderly population is on the rise, and as per surveys, the share of elders, as a percentage of the total population in the** country, is expected to increase from around 7.5% in 2001 to almost 12.5% by 2026, and surpass 19.5% by 2050. There is an urgent need to create a more robust elder care ecosystem in India, especially in the post-COVID phase.

SAGE programme

- SAGE programme and SAGE portal have been launched with a view to help such persons who **are interested in entrepreneurship in** the field of providing services for elderly care.
- **Up to Rs 1 crores will be given to Startups for elderly care**. An amount of Rs 100 crore has been assigned for the promotion of the silver economy.
- The **start-ups selected under SAGE will be those which will provide new innovative products** and services to elderly persons in various areas like health, travel, finance, legal ,housing, food among others.
- SAGE programme as per the suggestions of the Empowered Committee on start-ups for the elderly to solicit the

involvement of youth and their innovative ideas for elderly care, will help to make the programmes for elderly care a national movement than just a government programme.

- An allocation of Rs 25 crores has been made for the SAGE project in the current financial year i.e 2021-22.
- The SAGE project is shaped on the recommendations of the empowered expert committee (EEC) report on start-ups for elderly.
- The SAGE project aims to identify, evaluate, verify, aggregate, and deliver products, solutions and services directly to the stakeholders.
- The Ministry will act as a facilitator, enabling the elderly to access the products through these identified start-ups.

Swachh Bharat Mission (Grameen)

Context

- The Ministry of Jal Shakti under Swachh Bharat Mission Grameen (SBM-G) Phase 2 is poised to support over two lakh villages achieve solid and liquid waste management (SLWM) arrangements through an investment of over Rs. 40,700 crores in the present FY 2021-22.

About Swachh Bharat Mission (Grameen)

- SBM(G) Phase 2 aims at achieving comprehensive cleanliness in **villages also called ODF Plus status by focusing on ODF sustainability and ensuring SLWM** arrangements in villages.
- Implementation of **Swachh Bharat Mission Grameen Phase 2 in 2021-2022** will see construction of over 50 lakh Individual Household toilets (IHHLs), one Lakh Community toilets, Plastic Waste Management Units in over 2400 Blocks of India, **Gobardhan projects in 386 Districts, Faecal sludge management arrangements in over 250 Districts** apart from the targeted support for over 2 lakh villages in implementation of SLWM interventions.
- **SBM-G emphasized on the adoption of twin pit toilet technology** as it is relatively safer, low cost and easier to operate and maintain.
- It stressed on **the need for low cost technologies for solid and liquid waste management** as it would help decentralized operation and maintenance.
- Implementation of **Swachh Bharat Mission is led by Rural Local Bodies and the mission** has the reputation of being a unique janandolan on Swachhata in the country.
- The National Scheme Sanctioning Committee (NSSC) of SBM-G under the Chairmanship of Secretary, Ministry of Jal Shakti approved the Annual Implementation Plan (AIP) of States and UTs.

National Scheme Sanctioning Committee (NSSC)

- The National Scheme Sanction Committee comprises representatives of Ministry of Rural Development, Panchayati Raj, Ministry of Housing and Urban Affairs, representative from State Governments apart sector experts.
- The NSSC review the plans of all States and UTs and provided them guidance to intensify implementation as sanitation and hygiene are of paramount importance in the pandemic times.
- NSSC emphasized on the effective utilization of Fifteenth Finance tied funds earmarked for sanitation.

All India Survey on Higher Education 2019-20

Context

- Union Education Minister approved the release of the report of All India Survey on Higher Education 2019-20.
- **The All India Survey on Higher Education (AISHE) report** provides key performance indicators on the current status of Higher education in the country.
- This report is the 10th in the series of All India Survey on Higher Education (AISHE) annually released by D/o Higher Education.

Key findings of the report

- **Total enrolment** in higher education has improved by 3.04 per cent.
- In the last five years from 2015-16 to 2019-20, there has been a growth of 11.4 per cent in student enrolment.
- Out of these, nearly 85 per cent of the students (2.85 crore) were enrolled in the six major disciplines such as Humanities, Science, Commerce, Engineering and Technology, Medical Science and IT and Computer.

- The total number of students pursuing PhD in 2019-20 is 2.03 lakh against 1.17 lakh in 2014-15.
- **The Gross Enrolment Ratio (GER),** which is a ratio of enrolment in higher education to the population in the eligible age group (18-23) years, has improved by 0.8 percentage points. GER of students belonging to the eligible age group enrolled in Higher Education in 2019-20 is 27.1 per cent against 26.3 per cent in 2018-19 and 24.3 per cent in 2014-2015.
- The rise in female enrolment in higher education during the period is 18.2 per cent, as per the AISHE report.
- **Gender Parity Index (GPI),** a ratio of proportional representation of female and male, in higher education is 1.01 in 2019-20 against 1.00 in 2018-19. **The rise in GPI shows an improvement in the access to higher education for females** as compared to males.
- The number of Institutions of National importance increased 80% (from 75 in 2015 to 135 in 2020).

Pencil Portal

Context

- Union Minister of Women and Child Development and Textiles, has appealed to citizens to report the instances **of Child Labour on PENCIL Portal or by calling on Childline-1098**.
- India has ratified the two Core Conventions of International Labour Organization (ILO), Convention 138 regarding admission of age to employment and Convention 182 regarding worst forms of Child Labour in June 2017, which shows the country's commitment to a child labour free nation.

About PENCIL Portal

- PENCIL is an electronic platform that aims at involving Centre, State, District, Governments, civil society and the general public in achieving the target of child labour free society.
- Platform for Effective Enforcement for No Child Labour (PENCIL) had been launched by the Ministry of Labour and Employment, Government of India.

Components of the platform

- The PENCIL Portal has the following components.
  - **Child Tracking System**
  - **Complaint Corner**
  - **State Government**
  - **National Child Labour Project and Convergence.**

Implementation

- The Districts will **nominate District Nodal Officers (DNOs) who will receive the complaints and within 48 hours of receiving**, they will check the genuineness of the complaint and take the rescue measures in coordination with police, if the complaint is found to be genuine.

Performance Grading Index (PGI) 2019-20

Context

- Union Education Minister approved the release of Performance Grading Index (PGI) 2019-20 for States and Union Territories of India.

About the Performance Grading Index

- The Government has introduced the Performance Grading Index with a set of 70 parameters to catalyse transformational change in the field of school
- The PGI for States and Union Territories was first published in 2019 with the reference year 2017-18.
- The PGI exercise envisages that the index would propel States and UTs towards undertaking multi-pronged interventions that will bring about the much-desired optimal education outcomes.
- The PGI helps the States/UTs to pinpoint the gaps and accordingly prioritise areas for intervention to ensure that the school education system is robust at every level.

Highlights of the 2019-20 PGI

- Punjab, Chandigarh, Tamil Nadu, Andaman & Nicobar Islands and Kerala occupy the highest grade (Grade A++)

for 2019-20.

- Andaman & Nicobar Islands, Arunachal Pradesh, Manipur, Puducherry, Punjab and Tamil Nadu have improved overall PGI score by 10%, i.e., 100 or more points.
- Andaman & Nicobar Islands, Lakshadweep and Punjab have shown improvement by 10% (8 points) or more in the PGI domain: Access.
- In the PGI domain: Infrastructure and Facilities, thirteen States and UTs have shown improvement by 10% (15 points) or more. Andaman & Nicobar Islands and Odisha have shown improvement by 20% or more.
- Arunachal Pradesh, Manipur and Odisha have shown more than 10% improvement in the PGI domain: Equity.
- **Nineteen States and UTs have shown improvement by 10% (36 points) or more in the PGI domain**: Governance Process. Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Manipur, Punjab, Rajasthan and West Bengal have shown improvement by at least 20% (72 points or more).

INTERNATIONAL RELATIONS

Artemis Accords

Context

- New Zealand became the eleventh signatory to the Artemis Accords.
- It a blueprint for space cooperation.
- It supports the U.S. space agency's (NASA) plans to return humans to the moon by 2024 and to launch a historic human mission to Mars.

About Artemis Accords

- It ensures that space exploration is conducted in a safe, sustainable and transparent manner and in full compliance with international law.
- As more countries establish a presence in outer space, via research stations, satellites, or even rocket launches, these accords provide a set of principles to create a safe and transparent environment that inspires exploration, science, and commercial activities.
- The other signatories to the accords are the U.S., Australia, Britain, Canada, Italy, Japan, Luxembourg, South Korea, the United Arab Emirates, and Ukraine. Brazil also said it plans to sign.

African Union

Context

- The African Union suspended Mali's membership in response to military coup and threatened sanctions, if a civilian-led government is not restored.

Reasons for suspension

- West African regional bloc ECOWAS had also suspended Mali.
- African Union's Peace and Security Council called for transparent and swift return to the civilian-led transition failing which the Council can impose targeted sanctions.
- International powers feared that the latest revolt will jeopardise commitment to hold a Presidential election.
- It also undermines a regional fight against Islamist militants.

About AU

- The African Union (AU) is a **continental union** consisting of 55 member states located on the continent of Africa.
- The AU was announced in the **Sirte Declaration** in Sirte, Libya in 1999, calling for the establishment of the African Union.
- The intention of the AU was to replace the Organisation of African Unity (OAU) by 32 signatory governments.
- Within the African Union, there are official bodies, such as the Peace and Security Council and the Pan-African Parliament.
- The birth of the AU is a legacy of the Pan-African movement towardscreating institutions to achieve the objectives of peace, political stability,democracy, economic integration and good governance.

The objectives of the AU are the following

- To achieve greater unity, cohesion and solidarity between the African countries and African nations.
- To defend the sovereignty, territorial integrity and independence of its Member States.
- To accelerate the political and social-economic integration of the continent.

India's commitment to AU

- India is a member of the AU Partners Group (AUPG), which meets periodically in Addis Ababa.
- Since the inception of the African Union, India has been regularly participating in its various Summits.
- The first ever **India-Africa Forum Summit**, representing AU and the Regional Economic Communities of Africa, was heldin New Delhi in 2008.
- The Summit adopted the Delhi Declaration and the Africa-India Framework for Cooperation, which constituted the blueprint for cooperation between India and Africa in the 21st century.
- India undertook **Pan African E network Project (PANEP)** to support capacity building in education and medicine in Africa in association with the AU.

UN Economic and Social Council

Context

- India has been elected to the Economic and Social Council (ECOSOC), **one of the six main organs of the United Nations** for the **2022-24 term**.
- India was elected in the Asia-Pacific States category along with Afghanistan, Kazakhstan and Oman.
- India is currently serving the **2021-22 term as a non-permanent member** of the powerful UN Security Council and will assume the Presidency of the 15-nation UN organ in August.

ECOSOC

- The UN Charter established ECOSOC in 1945 as one of the six main organs of the United Nations.
- The 54-member ECOSOC is at the heart of the United Nations system to advance the three dimensions of sustainable development – economic, social and environmental.
- It is the central platform for fostering debate and innovative thinking, forging consensus on ways forward, and coordinating efforts to achieve internationally agreed goals.
- It is also responsible for the follow-up to major UN conferences and summits.
- ECOSOC's members are elected for three-year terms by the General Assembly.
- Seats on the Council are allotted based on **geographical representation** with 14 allocated to African states, 11 to Asian states, six to eastern European states, 10 to Latin American and Caribbean states and 13 to western European and other states.

Lancang-Mekong Cooperation (LMC)

Context

- China is hosting foreign ministers from the 10 ASEAN countries with Beijing pushing for closer economic cooperation and aligning COVID-19 recovery efforts.

Focus of the meet

- **Deepening economic cooperation**, particularly following the signing of the Regional Comprehensive Economic Partnership (RCEP) trade deal.

About Lancang-Mekong Cooperation (LMC)

- It is a multilateral format established in 2016 for cooperation between the riparian states of the Lancang River and Mekong River.
- The Lancang is the part of the Mekong that flows through China.
- **Cambodia, Laos, Myanmar, Vietnam and Thailand** are

five downstream countries of the Mekong River.

- The central purpose of the format is for China to manage water flow from its hydropower dams with the other riparian states.
- LMC Special Fund was created in 2016 to aid in small and medium-sized projects by the Lancang-Mekong countries.

'New Atlantic Charter'

Context
- **USA and UK** are looking forward to sign the New Atlantic against a backdrop of both political and personal differences.

New Atlantic Charter Aim
- to "defend the principles, values, and institutions of democracy and open societies."

Atlantic Charter
- This declaration was signed by British Prime Minister Winston Churchill and U.S. President Franklin D. Roosevelt in August 1941.
- It was signed for setting out common goals for the world after Second World War.
- Those goals included freer trade, disarmament and the right to self-determination of all people.
- It is often cited as a cornerstone of the trans-Atlantic "special relationship."
- The charter laid the foundation for the United Nations and NATO.

'Open Societies Statement' at G-7

Context
- India signed off on a joint statement by G-7 and guest countries on "open societies".

'Open Societies Statement'
- It reaffirms and encourage the values of "freedom of expression, both online and offline, as a freedom that safeguards democracy and helps people live free from fear and oppression".
- It also refers to "politically motivated internet shutdowns" as one of the threats to freedom and democracy.
- The joint statement was signed by the G-7 countries, and India, South Korea, Australia and South Africa, with host British Prime Minister calling them **"Democracies 11".**
- It is directed at China and Russia.
- **India has been under scrutiny over Internet curbs in Jammu and Kashmir** even as the Government is locked in a face-off over its new IT rules with tech giants such as Twitter.
- It affirmed "human rights for all, both online and offline, as set out in the Universal Declaration of Human Rights and other human rights instruments.
- It is committed to "strengthen open societies globally by protecting civic space and media freedom, promoting freedom of expression, freedom of assembly and association, and freedom of religion or belief, and by tackling all forms of discrimination, including racism."

Tax Inspectors without Borders (TIWB) programme

Context
- Bhutan's Tax Inspectors Without Borders (TIWB) programme launched in partnership with India.

Tax Inspectors without Borders (TIWB)
- It is a joint initiative of the United Nations Development Programme (UNDP) and the Organisation for Economic Cooperation and Development (OECD).
- India was chosen as the Partner Jurisdiction and has provided the Tax Expert for this programme.
- This programme is expected to be of about 24 months' duration.
- India in collaboration with the UNDP and the TIWB Secretariat aims to aid Bhutan in strengthening its tax administration by transferring technical know-how and skills to its tax auditors, and through sharing of best audit practices.

- The focus of the programme will be in the area of International Taxation and Transfer Pricing.
- This programme is another milestone in the continued cooperation between **India and Bhutan** and India's continued and active support for **South-South cooperation.**

US-India Strategic Partnership Forum (USISPF)

Context

- The Union Minister for Finance & Corporate Affairs participated in the Global Investors Roundtable organised by the US-India Strategic Partnership Forum (USISPF).
- The event provided investors with an opportunity to engage with the Union Finance Minister and senior officials of Indian Government to discuss potential investment opportunities and deliberate on the role of ongoing policy reforms that will enable greater Ease-of-Doing-Business in India.

About USISPF

- The US-India Strategic Partnership Forum (USISPF) is a **non-profit organization**.
- It's primary objective is **strengthening the India-US bilateral and strategic partnership through policy advocacy** in the fields of economic growth, entrepreneurship, employment-creation, and innovation.

International Labour Organisation

Context

- India completed its tenure as Chair of Governing Body of International Labour Organization after holding the position for the period October 2020- June 2021.
- India had assumed the Chairmanship after a gap of 35 years.
- During India's Chairmanship, the 109th session of the International Labour Conference held in June 2021 were conducted through virtual mode.

About ILO

- The International Labour Organization (ILO) is a United Nations agency whose mandate is to advance social and economic justice through setting international labour standards.
- Founded in 1919 under the League of Nations, it is the **first and oldest specialised agency of the UN.**
- The ILO has 187 member states: 186 out of 193 UN member states plus the Cook Islands.
- It is headquartered in Geneva, Switzerland.
- It is a member of the United Nations Development Group, a coalition of UN organization aimed at helping meet the Sustainable Development Goals.
- Within the UN system this organization has a **unique tripartite structure**: all standards, policies, and programmes require discussion and approval from the representatives of **governments, employers, and workers.**

Black Sea

Context

- Russia accused Britain on spreading lies over a warship confrontation in the Black Sea.

What exactly happened?

- Russia summoned the British Ambassador in Moscow for a formal diplomatic scolding after the warship breached what the Kremlin says are its territorial waters but which Britain and most of the world say belong to Ukraine.
- Russia warned London that it would respond resolutely to provocative actions by the British Navy off the coast of Russia-annexed Crimea.

Black sea issue of contention

- The Black Sea, which Russia uses to project its power in the Mediterranean, has for centuries been a flashpoint between Russia and its competitors such as Turkey, France, U.S. and the U.K.
- Russia seized and annexed the Crimea peninsula from Ukraine in 2014 and considers areas around its coast to be Russian waters.
- Western countries deem the Crimea to be part of Ukraine and reject Russia's claim to the seas around it.

About Black sea

- The Black Sea is a marginal sea of the Atlantic Ocean lying between Europe and Asia.
- The Black Sea is bordered by Bulgaria, Georgia, Romania, Russia, Turkey, and Ukraine.
- The Black Sea ultimately drains into the Mediterranean Sea, via the Turkish Straits and the Aegean Sea.
- The **Bosporus Strait** connects it to the small Sea of Marmara, which in turn is connected to the Aegean Sea via the Strait of the Dardanelles.
- To the north, the Black Sea is connected to the Sea of Azov by the Kerch Strait.

International Civil Aviation Organisation

Context

- The United Nation's aviation safety watchdog, the International Civil Aviation Organisation (ICAO), is expected to conduct a safety audit of the Indian aviation sector 'in a few months'.
- The audit was scheduled for June, but we sought postponement due to the severity of the second wave of COVID-19.

ICAO

- The International Civil Aviation Organization (ICAO) is a **specialized and funding agency of the United Nations**.
- The ICAO audits the aviation safety and aviation security oversight capacities of its 193 Member-States.
- These cover legislation, resources and other capacities, which State governments establish to effectively implement the ICAO's Standards and Recommended Practices (SARPs).
- There are eight audit areas, which include aircraft operations, airworthiness of civil aircraft, aerodromes, air navigation services and accident and serious incident investigations, among others.
- It changes the principles and techniques of international air navigation and fosters the planning and development of international air transport to ensure safe and orderly growth.
- Its headquarters is located in the Canada.
- It adopts standards and recommended practices concerning air navigation, its infrastructure, flight inspection, prevention of unlawful interference, and facilitation of border-crossing procedures for international civil aviation.
- ICAO defines the protocols for air accident investigation that are followed by transport safety authorities in countries signatory to the Chicago Convention on International Civil Aviation.
- The **Air Navigation Commission (ANC**) is the technical body within ICAO.
- India is a founding member of ICAO.

Universal Safety Oversight Audit Programme

- The ICAO had carried out the **Universal Safety Oversight Audit Programme** for India in February 2018.
- The audit result showed that the country's score declined to 57.44% from 65.82% earlier, <u>placing India below Pakistan, Nepal and many other nations.</u>

Corrective steps taken by the Civil Aviation Ministry

- The **Aircraft (Amendment) Act, 2020**, gave statutory powers to the Directorate General of Civil Aviation
- On the ICAO's recommendation the DGCA is made the licensing authority for Air Traffic Control Officers.

GS-III
ECONOMY

Enforcement Directorate

Context

- Assets worth **₹8,441.5 crore have been transferred to public sector banks** that suffered losses due to frauds committed by businessmen.

About the Enforcement Directorate

- The Directorate of Enforcement (ED) is a law enforcement agency and economic intelligence agency responsible for enforcing economic laws and fighting economic crime in India.
- It is part of the Department of Revenue, Ministry of Finance, Government Of India.
- It is composed of officers from the Indian Revenue Service, Indian Corporate Law Service, Indian Police Service and the Indian Administrative Service as well as promoted officers from its own cadre.

Functions

- D**irectorate of Enforcement is a specialized financial investigation agency** under the Department of Revenue, Ministry of Finance, Government of India, which enforces the following laws: -
- **Foreign Exchange Management Act,1999 (FEMA) - A Civil Law**, with officers empowered to conduct investigations into suspected contraventions of the Foreign Exchange Laws and Regulations, adjudicate contraventions, and impose penalties on those adjudged to have contravened the law.
- Prevention of Money Laundering Act, 2002 (PMLA) - A Criminal Law, with the officers empowered to conduct investigations to trace assets derived out of the proceeds of crime, to provisionally attach/ confiscate the same, and to arrest and prosecute the offenders found to be involved in Money Laundering.

Enforcing Contract portal

Context

- Justice Department launched the "Enforcing Contracts Portal"
- Aim: The portal aims to promote ease of doing business and improve 'Contract Enforcement Regime' in country.
- The portal is envisioned to be a comprehensive source of information pertaining to the legislative and policy reforms being undertaken on the "Enforcing Contracts" parameters
- The portal to provide easy access to latest information on commercial cases in Dedicated Commercial Courts of Delhi, Mumbai, Bengaluru and Kolkata
- The portal to also provide access to repository of commercial laws for ready reference.
- In order to make access to information on commercial court and related services easy, the portal contains several features such as
  - details/links of the Dedicated Commercial Courts in Delhi, Mumbai, Bengaluru and Kolkata ;
  - instructive videos related to e-filing, advocate registration;
  - manuals on using the Electronic Case Management Tools(ECMTs) like Just IS app for judicial officers and e-Courts services app for use by lawyers (developed by the e-Committee, Supreme Court of India)and
  - a repository of all related commercial laws for ready reference.
- The new portal also **hosts online reporting by all High Courts regarding the** Mediation and Arbitration centres annexed to the Commercial Courts in order to monitor and promote institutional mediation & arbitration by way of Pre-institution Mediation and Settlement (PIMS) of commercial cases.
- PIMS has **been introduced with the aim of reducing pendency of cases and** to promote mediation as a viable dispute resolution alternative in commercial cases.

Need of this move

- The Doing Business Report of World Bank Group benchmarks business regulations across 191 economies of the world.

- Within this, the Ease of Doing Business (EoDB) index is a ranking system which is an indication of an economy's position relative to that of other economies across 11 areas of business regulation.
- The **"Enforcing Contracts" indicator is one such essential area that measures time and cost** to resolve a standardized commercial dispute as well as a series of good practices in the judiciary.
- Currently, only the cities of Delhi and Mumbai are under the purview of the Ease of Doing Business survey by World Bank. Kolkata and Bengaluru are likely to be included in the Doing Business Report in future.

AGRICULTURE

Seed Miniket Program

Context
- Recenty, Agriculture Minister launched a seed minikitprogramme by distributing high yielding varieties of seeds of pulses and oilseeds to farmers.

About Seed MinikitProgramme
- The programme was launched as a major tool to introduce new varieties of seeds in fields.
- It will also help in increasing the seed replacement rate.
  - Seed Replacement Rate is the percentage of area sown out of the total area of crop planted in the season by using certified/quality seeds
- Under the programme, Mini-kits are being provided by NAFED, National Seeds Corporation (NCS), and Gujarat State Seeds Corporation.
- It is completely funded by Central government through National Food Security Mission.

Distribution of seed minikits
- Under the mission distribution of seeds continued till June 15, 2021.

Objective
- This mission was launched to increase production of oilseeds and pulses.

Production of Oilseeds and pulses
- Production of oilseeds increased from 27.51 million tonnes in 2014-15 to 36.57 million tonnes in 2020-21.
- Similarly, production of pulses increased from 17.15 million tonnes to 25.56 million tonnes in same period.

SCIENCE & TECHNOLOGY

Gain of Function Research

Context
- The term 'gain of function research' has recently cropped up in the debate about the origins of the Covid-19 pandemic, which has killed over 34 lakh people worldwide.

About
- 'Gain of function' is a field of research focused on growing generations of microorganisms, under conditions that cause mutations in a virus.
- These experiments are termed 'gain of function' because they involve manipulating pathogens in a way that they gain an advantage in or through a function, such as increased transmissibility, virulence, immunogenicity, and host tropism.
- Such experiments allow scientists to better predict emerging infectious diseases, and to develop vaccines and therapeutics.

Processes involved
- Gain of function research may use genetic engineering or serial passaging.
- Genetic engineering involves 'editing' the genetic code to modify the virus in a way predetermined by the scientists.

- Whereas, serial passaging involves allowing the pathogen to grow under different circumstances and then observing the changes.
- For example, the pathogen may first be grown in one environment, and then a portion of it may be taken and allowed to grow in different sets of controlled environments.
- The process is continuously repeated, and the final product is compared to the original pathogen to understand how the microbe changed its genetic code.

Note: To know about Mutation **Visit:** https://www.iasgyan.in/blogs/bengal-strain-all-about-mutation

Nipah Virus

Context

- Recently, Nipah Virus antibodies in bats were found from Mahabaleshwar cave in Maharashtra.

About

- The Nipah virus (NiV) is a type of **RNA virus** in the **genus Henipavirus.**
- **Symptoms :** fever, cough, headache, shortness of breath, and confusion, coma and even death.
- The virus normally circulates among specific types of fruit bats.
- It can both spread between people and from other animals to people.
- Spread typically requires direct contact with an infected source.
- As of 2021 there is neither vaccine nor specific treatment.
- Preventive measures include avoiding exposure to bats and sick pigs, and not drinking raw date palm sap.
- The disease **was first identified in 1998** in Malaysia. The disease is named after a village in Malaysia, Sungai Nipah.

Peter Pan Syndrome

Context

- A special court in Mumbai has granted bail to a 23-year-old accused of sexually assaulting a minor. During the hearing, the accused had told the court he suffered from "Peter Pan Syndrome"

About

- Peter Pan Syndrome is a psychological condition that is used to describe an adult who is socially immature.
- People develop behaviors like living life carefree, finding responsibilities challenging in adulthood, and basically, "never growing up" — suffer from Peter Pan Syndrome.
- Peter Pan Syndrome is not recognized by the World Health Organization.
- It is not listed in the Diagnostic and Statistical Manual of Mental Disorders.

Wendy Syndrome

- People suffering from Wendy Syndrome as often seen "making decisions, tidying up messes, and offering one-sided emotional support".

WIHG 54th Foundation

Context

- Role of data in preserving the Himalayan Natural Resource highlighted at 54th Foundation Day of Wadia Institute of Himalayan Geology.

About

- Wadia Institute of Himalayan Geology, Dehradun is an **autonomous Natural Resources research institute** for under the Department of Science and Technology, **Ministry of Science and Technology**.
- It was established in June, 1968 in the Botany Department, Delhi University for the study of Geology of the Himalaya.

Issues faced by Himalayan region

- Himalayan region is facing a number of issues like Global warming/ climate change, growth of human population, forest fires and degradation, loss of biodiversity, unplanned urbanisation, ambitious development projects, and unsustainable tourism.

- The solution of these issues through six interdependent approaches:
- empowerment of the people,
- rural development,
- development of sectors by creating productive employment opportunities,
- maximising self-governance,
- augmenting infrastructure, and
- ensuring adequate flow of resources.

Significance of WIHG

- The role played by WIHG in the development of the Himalaya and developing a huge data bank, which can be useful for the policymakers of the Himalayan region,

Gamma-ray bursts (GRBs)

Context

- Researchers derived the spectrum of the very-high-energy gamma-ray afterglow emission of a relatively nearby gamma-ray burst.

About

- Gamma-ray bursts (GRBs) are immensely energetic explosions that have been observed in distant galaxies.
- They are the brightest and most energetic electromagnetic events known to occur in the universe.
- Bursts can last from ten milliseconds to several hours.
- After an initial flash of gamma rays, a longer-lived "afterglow" is usually emitted at longer wavelengths (X-ray, ultraviolet, optical, infrared, microwave and radio)
- The intense radiation of most observed GRBs is released during processes like creation or merging of neutron stars or black holes.
- All observed GRBs have originated from outside the Milky Way galaxy.
- GRBs were first detected in 1967 by the Vela satellites.

Deep Space Atomic Clock

Context

- NASA's Deep Space Atomic Clock, which launched on a satellite in June 2019, outperformed all other clocks in space during its first year in orbit around Earth.

Space navigation

- To navigate the solar system today, space probes listen for signals from antennas on Earth and then bounce those signals back.
- Ultraprecise, refrigerator-sized atomic clocks on the ground measure that round trip time — which can take hours — to pinpoint a spacecraft's location.

DSAC

- The Deep Space Atomic Clock (DSAC) is a miniaturized, ultra-precise mercury-ion atomic clock for precise radio navigation in deep space.
- DSAC could simply measure how long it takes a signal from Earth to arrive and calculate its own position.
- The Deep Space Atomic Clock (DSAC) is as stable as a ground clock.
- DSAC is so stable because it keeps time using electrically charged atoms, or ions, rather than neutral atoms.
- It is expected that a DSAC would incur no more than 1 microsecond of error in 10 years of operations.
- It is expected to improve the precision of deep space navigation, and enable more efficient use of tracking networks. The project is managed by NASA's Jet Propulsion Laboratory.

Global Cyber Security Index (GCI) 2020

In News

- According to a United Nations Report, India has jumped 37 places to 10th position in the Global Cyber Security Index (GCI) 2020.

- Breaking into the top 10 list, India also ranks <u>fourth in the Asia-Pacific region.</u>
- The top rank in the GCI was achieved by the US with a score of 100.

About GCI

- The GCI is a composite index created, analyzed and published <u>by the International Telecommunication Union (ITU) -</u> a specialized agency of the United Nations.
- It measures the commitment to cyber-security of its 194 member countries to raise cyber-security awareness.
- The latest report is the <u>fourth GCI edition by the ITU,</u> the first version of which was launched six years ago.
- In a nutshell, GCI measures countries' commitment to cybersecurity on a global scale, to raise awareness of the importance and various dimensions of the issue.
- Each country's development or engagement is assessed along five pillars – (i) Legal measures, (ii) Technical measures, (iii) Organizational measures, (iv) Capacity development, and (v) Cooperation- and then aggregated into a composite score.

Aducanumab

Context

- The U.S. Food and Drug Administration approved Aduhelm (aducanumab) for the treatment of Alzheimer's.

Alzheimer

- Alzheimer's is an <u>irreversible, progressive brain disorder</u> that slowly destroys memory and thinking skills, and eventually, the ability to carry out simple tasks.
- While the specific causes of Alzheimer's disease are not fully known, it is characterized by changes in the brain—including <u>amyloid plaques and neurofibrillary, or tau, tangles—that result in loss of neurons and their connections</u>.
- These changes affect a person's ability to remember and think.

- Alzheimer's disease is most common in people over the age of 65. It can also affect people in 30s and 40s.
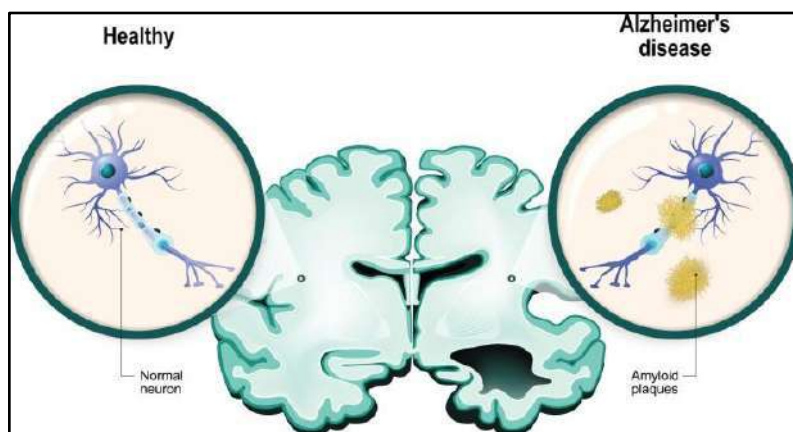
H10N3

Context

- The first human case of a rare strain of bird flu known as H10N3 has been reported in a 41-year-old man in eastern China.
- Until now, no human case of H10N3 has been reported elsewhere.

About

- Little is known about the virus, which appears to be rare in birds.

Bird flu

- Bird flu or avian flu, is caused by influenza viruses that spread between birds.
- It can often spread easily between birds, but <u>very rarely causes disease in humans</u>.
- Symptoms resemble those of normal flu – fever, cough, muscle aches, sore throat – but it can develop into a serious respiratory illness.
- Other strains of bird flu, including H5N1 and H7N9, have caused hundreds of deaths in humans since the first cases were reported in 1997.

Note: To Know about Flu Viruses Visit: https://www.iasgyan.in/blogs/different-types-of-flu-viruses-you-must-know-about

Fast Radio Bursts

Context

- A radio telescope in Canada has detected 535 fast radio bursts, quadrupling the known tally of these brief, highly energetic phenomena in one go.

About

- Fast radio bursts are bright, unresolved (pointsource-like), broadband (spanning a large range of radio frequencies), millisecond flashes found in parts of the sky.
- The first FRB was discovered in 2007.

Origin

- The exact origin and cause of the FRBs is still the subject of investigation; proposals for their origin range from a rapidly rotating neutron star and a black hole, to extraterrestrial intelligence.
- Many theories suggest the bursts originate from neutron stars, which are corpses of stars that died in catastrophic explosions known as supernovas.

How Fast Radio Bursts Work

Fast radio bursts are brief, energetic blips of radio waves that originate far across the universe. At least one repeats, which has added to the challenge of explaining what might be creating them. A new model accounts for past observations and predicts specific features that should be seen going forward.

❶ A magnetar releases a flare of electrons and other charged particles.

❷ The flare collides with the remnants from an old flare, creating huge magnetic fields.

❸ In the ensuing shock, gyrating electrons generate energetic radio waves. As the shock slows, the radio signal downshifts to lower frequencies.
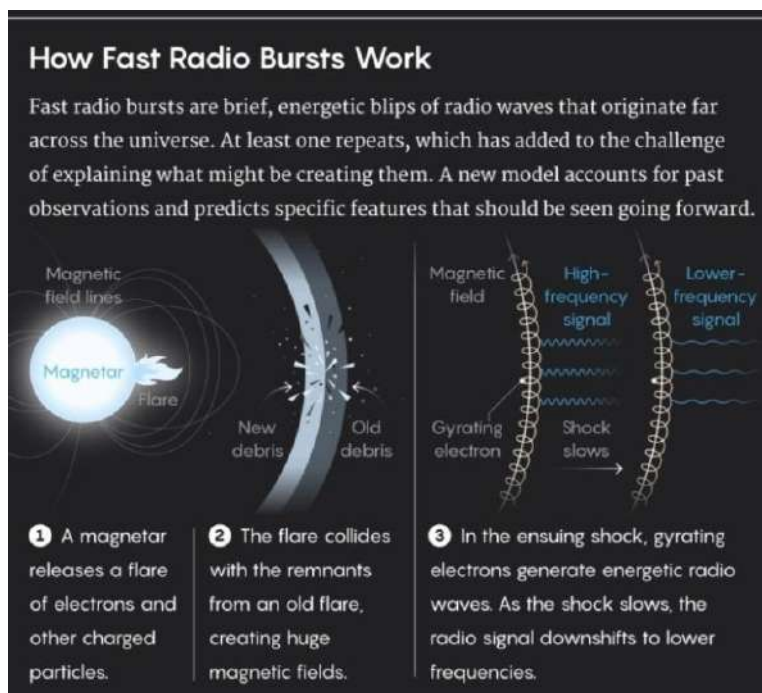
Jivan Vayu

Context

- IIT Ropar has developed power free CPAP device "JivanVayu". The device has been manufactured using 3D printing.
- It can be used as a substitute for Continuous Positive Airway Pressure (CPAP) machine.

Details

- This is the nation'sfirst such device which functions even without electricity.
- It is adapted to both kinds of oxygen generation units like CO_2 cylinders and oxygen pipelines in hospitals.
- These provisions are not available in otherwise existing CPAP machines.
- The device is designed to maintain a FiO_2 (fraction of inspired oxygen or FiO_2 is the concentration of oxygen in the gas mixture) of above 40 per cent with a PEEP (positive end-expiratory pressure) of 5-20 cm H_2O.
- Additionally, the device houses a viral filter at the air entrainment end with a viral efficacy of 99.99 per cent.
- The viral filter ensures that the entrained air does not bring in any pathogens from the environment.
- The flow and Positive pressure can be controlled through the regulator at the cylinder end and PEEP valve respectively.

Shenzhou-12

Context

- Recently, China launched Shenzhou-12, or Divine Vessel in first crewed mission since 2016.

Details

- Shenzhou-12 is the third of 11 missions – four of which will be crewed – needed to complete China's first full-fledged space station called **Tiangong.**
- Construction of the space station began with the launch of Tianhe, the first and largest of three modules. The station is expected to be completed by 2022.
- Tiangongwill be a space station placed in low Earth orbit between 340 and 450 km above the surface.
- Shenzhou-12 spacecraft was launched on a Long March-2F rocket in Jiuquan Satellite Launch Center in China's Gobi Desert.

- The flight marks the seventh crewed Chinese spaceflight and the seventh crewed flight of the Shenzhou program.
- The spacecraft carried three members of the People's Liberation Army Astronaut Corps (PLAAC) on the first flight to the Tianhe core module.
- The trio is expected to stay in space <u>for three months</u> as part of the country's space station mission.

Note: China is the third country after the former Soviet Union and the United States to carry out a manned mission on its own.

SECURITY & DEFENSE

Project-75I

Context

- The Defence Acquisition Council (DAC), headed by Defence Minister approved the construction of six conventional submarines under Project-75I at an estimated cost of ₹43,000 crores.

More about news

- This largest 'Make in India' project will create a tiered industrial ecosystem for submarine construction in India
- With this India would be able to **achieve its 30-year submarine construction programme** that aims to acquire national competence in submarine.
- Even the Strategic Procurement model of the Defence Procurement Procedure (DPP) also aims to promote the role of Indian industry in manufacturing and build a domestic defence industrial ecosystem.
- Mazagon Docks Limited (MDL) and Larsen & Toubro (L&T) are shortlisted as the Indian partners for the deal.
- All submarines that will be built in India, are required to be equipped with Air Independent propulsion (AIP) modules and be able to fire land attack cruise missiles.

STRATEGIC PARTNERSHIP

Depleting underwater strength

➤ India requires 18 diesel-electric subs, 6 nuclear-powered attack subs (SSNs) & 4 nuclear-powered subs with nuclear-tipped missiles (SSBNs)

➤ But has only 2 new Scorpene & 13 old conventional subs. Also 1 SSBN (INS Arihant) & 1 SSN (INS Chakra)

➤ 4 more Scorpene subs, being built at MDL under ₹ 23,652 crore Project-75, to be delivered by 2021-22

➤ 3 more SSBNs, after INS Arihant, being built at Vizag for ₹ 90,000 crore

➤ India to get 2nd SSN on 10-year lease from Russia under $1.5 billion deal. First one, INS Chakra, came in 2012 for $900 million

Project-75-India

➤ Project for 6 stealth diesel-electric submarines for around ₹ 50,000 crore first got 'acceptance of necessity' in Nov 2007

➤ Govt promulgated strategic partnership model in May 2017

➤ 2 Indian shipyards (L&T and MDL) & 5 foreign

companies (Russian Rubin Design Bureau, French Naval Group-DCNS, German ThyssenKrupp Marine Systems, Spanish Navantia & South Korean Daewoo) now shortlisted

➤ Will take around 2 years for contract to be inked

➤ Will thereafter take 7 to 8 years for the first submarine to roll out

Project-75I

- The Project 75I-class submarine is a follow-on of the Project 75 Kalvari-class submarine for the Indian Navy.
- Under this project, the Indian Navy intends to **acquire six diesel-electric submarines, which will also feature**

advanced **air-independent propulsion systems** to enable them to stay submerged for longer duration and substantially increase their operational range.

- All six submarines are expected to be constructed in Indian shipyards

INS Sandhayak

Context

- Navy's oldest **hydrographic survey ship** INS Sandhayak decommissioned after 40 yrs
- During the 40 years of its service in the Indian Navy, INS Sandhayak undertook over **200 major hydrographic surveys.**
- The ship also took part in important operations like **operation Pawan in Sri Lanka, 198**7, **operation Rainbow** for Humanitarian Assistance in the aftermath of Tsunami in 2004

"Operation Pangea XIV"

Context

- Interpol-led Operation Pangea XIV targeted sale of fake medicines, products.
- More than 1.10 lakh web links, including websites and online marketplaces, have been taken down in the operation.
- It involved the police, customs and health regulatory authorities of 92 countries against the sale of fake and illicit medicines and medical products.
- Indian agencies also participated in the operation, as the Central Bureau of Investigation act as the nodal body for the Interpol in the country.

Umling La Pass

Context

- The first ever Solo Woman Motorcycle Expedition by Ms Kanchan Ugursandi to Umling La Pass, Ladakh and back flagged off.

Umling La Pass

- It is one of the highest motorable roads in the world.
- Located in the Ladakh region of Jammu and Kashmir.
- Stretching to a distance of almost 86 km, connects Chisumle and Demchok villages. Both these villages lie in close proximity to the Indo-China border in the eastern sector.

Innovations for Defence Excellence (iDEX) challenge

Context

- Defence Minister has approved the budgetary support of ₹498.8 crore to Innovations for Defence Excellence (iDEX) challenge under the Defence Innovation Organisation (DIO) for the next five years.

Innovations for Defence Excellence (iDEX)

- The iDEX framework and establishment of the DIO by the Department of Defence Production (DDP) is aimed at promoting innovation and indigenisation in the aerospace and defence sector at the start-up level.
- iDEX will be funded and managed by a "Defence Innovation Organisation (DIO).
  - DIO is formed as a "not for profit" company as per Section 8 of the Companies Act 2013 for this purpose.
- With budgetary support of ₹498.8 crore for the next five years, it is aimed at providing financial support to nearly 300 start-ups, Micro, Small and Medium Enterprises (MSME), individual innovators and 20 partner incubators under the DIO framework
- It aims at empowering a culture of technology co-creation and co-innovation in the sector and boosts innovation among the start-ups and encourages them to be a part of the ecosystem.
- Its main components are:
  - **Facilitate rapid development** of new, indigenized, and innovative technologies for the Indian defence and aerospace sector, to meet needs for these sectors in shorter timelines

- o **Create a culture of engagement** with innovative startups, to encourage co-creation for defence
- o and aerospace sectors
- o **Empower a culture of technology co-creation** and co-innovation within the defence and aerospace sectors.

SIPRI Year Book 2021

Context

- Swedish think tank Stockholm International Peace Research Institute (SIPRI) Year Book 2021 released.

Key findings of the report

- India possessed an estimated 156 nuclear warheads at the start of 2021 compared to 150 at the start of last year.
- Number of nuclear warheads globally appears to be increasing reversing earlier trend
- China, India, Pakistan are expanding nuclear arsenal.
- The nine nuclear armed states - the **U.S., Russia, the U.K., France, China, India, Pakistan, Israel and North Korea** - together possessed an estimated 13,080 nuclear weapons at the start of 2021.
- Russia and the U.S. together possessed over 90% of global nuclear weapons and have extensive and expensive modernisation programmes under way.
- India and Pakistan are seeking new technologies and capabilities that dangerously undermine each other's defence under the nuclear threshold.
- It suggested that a **robust, trusted, reliable, deniable back channel between the leaderships is the most promising means** by which India and Pakistan could achieve greater strategic and nuclear deterrence stability.

Stockholm International Peace Research Institute (SIPRI)

- It is an **independent international institute** dedicated to research into conflict, armaments, arms control and disarmament.
- It provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.
- Based in Stockholm, SIPRI is regularly ranked among the most respected think tanks worldwide.

EUNAVFOR exercise

Context

- The maiden Indian Navy and European Union Naval Force (EUNAVFOR) exercise held in the Gulf of Aden.

More about news

- EUNAVFOR is a Joint Naval Exercise, where navies of India, Italy, Spain and France participated.
- Aim: to enhance and hone war-fighting skills and ability as an integrated force to promote, peace, security and stability in the maritime domain.
- INS Trikand, mission deployed for anti-piracy operations, is participating in the exercise.
- The EUNAVFOR and the Indian Navy converged on multiple issues, including counter-piracy operations and protection of vessels deployed under the charter of World Food Programme.
- The two sides also have regular interaction through **SHADE (Shared Awareness and De-confliction)** meetings held annually in Bahrain.
- This engagement underscores the shared values as partner navies, in ensuring freedom of seas

and commitment to an open, inclusive and a rules-based international order.

Krivak class second frigate

Context

- The keel of the second frigate, of additional Krivak class stealth ships, being built with **technology transfer from Russia by the Goa Shipyard Limited (GSL)** was laid.
- Keel laying of any ship symbolising formal commencement of the construction process.
- It would be delivered in 2026 and the second ship after 6 months.
- **India and Russia** signed an **Inter-Governmental Agreement (IGA)** for four Krivak or Talwar stealth frigates — two to be procured directly from Russia and two to be built by the GSL.
- India signed a $1-billion deal with Russia for the direct purchase.
- India had earlier procured six Krivak class frigates weighing around 4000 tonnes in two different batches, the **Talwar class and the upgraded Teg class**.
- The four ships to be built will weigh 300 tonnes more than the earlier ones and will be armed with BrahMos supersonic cruise missiles,

'Passage Exercise'

Context

- The Indian Air Force (IAF) and Indian Navy will participate in a 'Passage Exercise' or PASSEX with US Navy in the Indian Ocean.
- **'Passage Exercise'** is an exercise done between two navies to ensure that the navies are able to communicate and cooperate in times of war or humanitarian relief.
- **Aims:** To strengthen the bilateral relationship and cooperation by demonstrating the ability to integrate and coordinate comprehensively in maritime operations.
- Significance: The two parties will endeavour to hone their war-fighting skills and enhance their interoperability as an integrated force to promote peace, security and stability in the maritime domain".
- It is **a strategic outreach exercise** with the defence forces of friendly foreign countries" to "focus on multiple areas including enhancing aspects of interoperability, nuances of international integrated maritime (Search and Rescue) operations and exchange of best practices in the maritime airpower domain."

Futuristic Infantry Combat Vehicles

Context

- The Army has issued a Request For Information (RFI) for the procurement of 1,750 Futuristic Infantry Combat Vehicles (FICVs) to replace the Russian-origin infantry vehicles in service.
- FICVs will be employed for cross-country operations, including amphibious operations in plain and desert terrain along the Western borders and high altitudes, up to 5000m, and mountain terrain along the northern borders in eastern Ladakh, the central sector and north Sikkim.
- They will replace the 1980s vintage Russian-origin BMP-2.
- FICV main task: to destroy enemy tanks, armoured personnel carriers, combat vehicles, low flying helicopters and other ground-based weapon platforms and positions.
- The vehicle should have a service or operational life of at least 32 years with maximum one overhaul and repair.
- FICV is intended to have a wireless third-generation Anti-tank guided missile having dual mode seekers with ranges of 4Km.
- Fire & update capability, interchangeable warheads, a main gun firing a variety of ammunition configuration to take on soft, hard targets and aircrafts at ranges between 2 to 4 Km will also be employed.
- It also queries the designer on the feasibility of upgrading the calibre of the main gun without change in the turret, fire control systems and sights.

Pinaka rockets

Context

- The Defence Research and Development Organisation (DRDO) has successfully test-fired enhanced range versions of indigenously-developed Pinaka rockets and 122mm Caliber rockets from a Multi-Barrel Rocket Launcher (MBRL).

Enhanced Pinaka Rocket

- It is indigenously developed by the Defence Research and Development Organisation (DRDO)
- The enhanced Pinaka along with guidance Pinaka will cover the range between 60 to 90 kilometres.
- It would replace the existing Pinaka Mk-1 rockets, which had a range of 36 km.
- The enhanced Pinaka has been developed to counter the People's Liberation Army threat in East Ladakh with the Chinese deploying large number of rocket regiments in support of artillery guns.
- The enhanced Pinaka and guided Pinaka have both been cleared for deployment on the borders.

PINAKA ROCKET

- The Pinaka, a **multi-barrel rocket-launcher (MBRL) system** named after Shiva's bow, can fire a salvo of 12 rockets over a period of 44 seconds.
- Its development was started by the DRDO in the late 1980s, as an alternative to the Multi Barrel Rocket Launcher systems of Russian make called like the '**Grad'.**
- The navigation system of Guided Pinaka missile is also aided by the **Indian Regional Navigation Satellite System (IRNSS).**

IRNSS

IRNSS

Indian Regional Navigation Satellite System

IRNSS (NavIC) is designed to provide accurate real-time positioning and timing services to users in India as well as region extending up to 1,500 km from its boundary

NAVIGATION CONSTELLATION CONSISTS OF SEVEN SATELLITES

3 in geostationary earth orbit (GEO) and

4 in geosynchronous orbit (GSO) inclined at 29 degrees to equator

Each sat has three rubidium atomic clocks, which provide accurate locational data

IT WILL PROVIDE TWO TYPES OF SERVICES

1 Standard positioning service | Meant for all users

2 Restricted service | Encrypted service provided only to authorised users (military and security agencies)

Applications of IRNSS are: Terrestrial, aerial and marine navigation; disaster management; vehicle tracking and fleet management; precise timing mapping and geodetic data capture; terrestrial navigation aid for hikers and travellers; visual and voice navigation for drivers

While **American GPS** has **24 satellites** in orbit, the number of sats visible to ground receiver is limited. In **IRNSS, four satellites** are always in geosynchronous orbits, hence always visible to a receiver in a region **1,500 km** around India

Geostationary earth orbit

Geosynchronous orbit

Caliber rockets

- It has an enhanced range of 122mm.
- It has been developed for the Indian Army.
- It **can destroy targets up to 40km** and would replace the existing 122mm Grad rockets.
- The rocket system has been developed jointly by Armament Research and Development Establishment (ARDE) in Pune and High Energy Materials Research Laboratory (HEMRL) with manufacturing support from M/s Economic Explosives Limited in Nagpur.

INS Vikrant

Context

- Raksha Mantri reviewed the progress of construction of first Indigenous Aircraft Carrier (IAC) built by M/s Cochin Shipyard Ltd.

INS Vikrant

- The IAC would be commissioned as INS Vikrant in the first half of 2022, which would be the most potent sea-based asset.
- It is expected to have a top speed of 30 knots (approximately 55 kmph) and is propelled by four gas turbines.
- Its endurance is 7,500 nautical miles at 18 knots (32 kmph) speed.
- The vessel can carry up to 1,500 personnel and has 2,300 compartments.
- The ship shall operate MiG-29K fighter aircraft, Kamov-31 Air Early Warning Helicopters, the soon to be inducted MH-60R multi-role helicopter and the indigenously manufactured Advanced Light Helicopters.
- With an overall length of 263 metre and a breadth of 63 metre, it **is the largest vessel made in India** and carries a **price tag of about ₹20,000 crore**.
- It has ability to project Air Power over long distances, including Air Interdiction, Anti-Surface Warfare, offensive and defensive Counter-Air, Airborne Anti-Submarine Warfare and Airborne Early Warning.

Significance of IAC

- IAC is a shining example of 'AatmaNirbhar Bharat' as it has nearly **75 per cent indigenous content - from design to steel used in construction to key weapons and sensors.**
- It help secure India's interests in maritime domain.
- IAC and **Project Seabird at Karwar, which will be the Asia's largest Naval Base**, are examples of India's unwavering focus.
- It will help to realize the **vision of SAGAR** (Security and Growth for All in the Region) and the wider goal of a **free, open and inclusive Indo-Pacific to ensure peace and stability** in the region.

'Project Seabird'

- It is the largest naval infrastructure project for India.
- It involves creation of a naval base at Karwar on the west coast of India.
- This $3 billion program will provide the Indian Navy with its largest naval base on the west coast and also the largest naval base east of the Suez Canal.
- The naval complex will support several major warships and submarines and yard crafts.

ENVIRONMENT & ECOLOGY

Clean Energy Ministerial's (CEM) – Industrial Deep Decarbonization Initiative

Context

- **India along with Govt. of United Kingdom** launched new workstream **to promote industrial energy efficiency** under the Clean Energy Ministerial's (CEM) – Industrial Deep Decarbonization Initiative (IDDI), at the 12th Chief Energy Ministerial (CEM) .

The Clean Energy Ministerial Industrial Deep Decarbonisation Initiative (IDDI)

- It is a global coalition of public and private organisations who are working to stimulate demand for low carbon industrial materials.
- It works to standardise carbon assessments, establish ambitious public and private sector procurement targets, incentivise investment into low-carbon product development and design industry guidelines.
- Coordinated by UNIDO, the IDDI is co-led by the UK and India. Additional members include Germany and Canada.
- United Nations Industrial Development Organization (UNIDO) is a specialized agency of the United Nations that assists countries in economic and industrial development
- Mission:
- Sourcing and sharing data for common standards and targets
- Encouraging governments and the private sector to buy low carbon steel and cement
- India: Committed to cut emissions intensity per unit of GDP by 33 to 35 per cent by 2030.

New millipede species

Context

- A new species of millipede, just 3 millimetres long, has been discovered in a grove named **Thekkumbadu Koolom Thazhekavu**.

About this millipede

- Its body is pale pink and possesses 20 segments in males and 19 segments in females.
- They sense their surroundings with a pair of very small but specialised antenna.

Significance of this discovery

- **Ecological role is determined:** These millipedes **consume fallen leaf litter**, and process some 15%-20% of calcium input into the soil. Hence they play an important role in increasing soil fertility.
- **Geographical linkage:** The presence of this slow dispersal organism is further evidence of the connection between India and Sri Lanka.
- Neglected area: This finding is also important as no progress has been made in the study of indigenous millipedes in India since the studies during the colonial period. So far, only 57 species of millipedes have been found in Kerala, all discovered before Independence.

H10N3 Bird Flu

Context

- China has confirmed the first instance of human infection from H10N3, a rare strain of a virus that normally infects poultry.

What is H10N3?

- It is **an avian influenza viruses** circulate in poultry.

- Its sporadic infection in humans is a vivid reminder that the threat of an influenza pandemic is persistent.
- **H5N1** is the most common virus causing bird flu, or avian influenza, it **can cross over to other animals, as well as humans.**
- According to the WHO, the H5N1 is not known to transmit easily among humans.
- Since 2003, these avian and other influenza viruses have spread from Asia to Europe and Africa.

What are the typical symptoms of an avian influenza infection?

- Avian, swine and other zoonotic influenza virus infections in humans may cause disease with symptoms like mild upper respiratory tract infection (fever and cough), early sputum production and rapid progression to severe pneumonia, sepsis with shock, acute respiratory distress syndrome, and even death.

Aravali forest

Context

- The Supreme Court ordered the Haryana government and the Faridabad Municipal Corporation to take "all essential measures" to remove encroachments, in the ecologically fragile Aravali forest land.

About the Aravalli Range

- It is a mountain range in Northwestern India, running approximately 670 km in a south-west direction, starting near Delhi, passing through southern Haryana and Rajasthan, and ending in Gujarat.
- The highest peak is **Guru Shikhar.**
- It is the oldest range of fold mountains in India.

Sclater's Monal and Himalayan Monal

Context

- Sclater's Monal and Himalayan Monal, a colour pheasant sighted in Arunachal's Upper Siang
- **Himalayan monal** (Lophophorus impejanus) are more widely distributed from **Afghanistan to northeast India**

Sclater's (Lophophorus sclateri) monal

- It is found in southern China and northern Myanmar.
- It is listed as vulnerable by the International Union of Conservation of Nature.
- It is an endemic bird of the Eastern Himalaya, mostly recorded from the junction of India, Myanmar, Tibet and Yunnan province of China.
- This pheasant is restricted to Arunachal Pradesh on the Indian side.
- It is Scheduled I species of Wildlife Protection Act, 1972.
- Sighting the two species of pheasants is a **good indicator of the ecology of the area**.

National Action Plan on Climate Change and Human Health

Context

- Union Minister for Health and Family Welfare digitally addressed the first meeting of the World Health Organization High-Level Coalition on Health and Energy Platform of Action.

National Action Plan on Climate Change and Human Health

- An expert body called the National Action Plan on Climate Change and Human Health was constituted with the objectives of creating awareness amongst the general population, health-care providers and policy makers regarding impact of climate change on human health.
- It is also aimed at protecting people against climate sensitive illnesses such as cardio-respiratory diseases, cancers and allergies

Malé Declaration

- In the context of "**Green and Climate Resilient Healthcare Facilities**", India became signatory to the Malé Declaration in 2017.

• Under this declaration, India agreed to promote climate-resilient healthcare facilities to be able to withstand any climatic event.

'Operation Olivia'

Context

• Every year, the Indian Coast Guard's "Operation Olivia", initiated in the early 1980s, helps protect Olive Ridley turtles as they congregate along the Odisha coast for breeding and nesting from November to December.

• Odisha has formulated laws for protecting Olive Ridley turtles, and the Orissa Marine Fisheries Act empowers the Coast Guard as one of its enforcement agencies.

• Coordination of efforts is done at various levels, including enforcing the use of turtle excluder devices (TED) by trawlers in the waters adjoining nesting areas; prohibiting the use of gill nets on turtle approaches to the shore; and curtailing turtle poaching.

Olive Ridley

• The Olive Ridley (Lepidochelys olivacea) is listed as vulnerable under the International Union for Conservation of Nature's Red list.

• All five species of sea turtles found in India are included in Schedule I of the Indian Wildlife Protection Act, 1972, and in the Appendix I of the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES), which prohibits trade in turtle products by signatory countries.

Threats to Olive Ridley turtles

• Three main factors that damage Olive Ridley turtles and their eggs —
  o **heavy predation of eggs by dogs and wild animals**
  o **indiscriminate fishing with trawlers and gill nets, and**
  o **beach soil erosion.**

• **Dense fishing activity** along the coasts of Andhra Pradesh, Odisha and West Bengal, especially ocean-going trawlers, **mechanised fishing boats and gill-netters** pose a severe threat to turtles.

Nesting habits

• The Olive Ridley has one of the most extraordinary nesting habits in the natural world, including **mass nesting called arribadas**.

• The 480-km-long Odisha coast has three **arribada beaches at Gahirmatha**, the mouth of the **Devi river, and in Rushikulya**, where about 1 lakh nests are found annually.

• More recently, a new mass nesting site has been discovered in the **Andaman and Nicobar Island**s, with more than 5,000 nests reported in a season.

United Nations Convention to Combat Desertification (UNCCD)

Context

• Prime Minister addressed the United Nations during the High-Level Dialogue on Desertification, Land Degradation and Drought.

Key highlights of the High-Level Dialogue

• It assessed the progress made in the fight against desertification, land degradation and drought.

• Mapped the way forward in view of the end of the UN Decade for Deserts and the Fight against Desertification and the beginning of the UN Decade on Ecosystem Restoration.

• Focused on generating momentum and raising ambition for using land restoration.

• Highlighted the importance of leveraging accelerated action on land-based solutions for climate and biodiversity.

> **About United Nations Convention to Combat Desertification (UNCCD)**
> - Established in 1994, the United Nations Convention to Combat Desertification (UNCCD) is the **sole legally binding international agreement** linking environment and development to sustainable land management.
> - It addresses specifically the arid, semi-arid and dry sub-humid areas, known as the drylands, where some of the most vulnerable ecosystems and peoples can be found.
> - The new **UNCCD 2018-2030 Strategic Framework** is the most comprehensive global commitment to achieve **Land Degradation Neutrality (LDN) in** order to restore the productivity of vast expanses of degraded land, improve the livelihoods of more than 1.3 billion people, and reduce the impacts of drought on vulnerable populations.
> - UNCCD collaborates closely with the other two Rio Conventions; the **Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC),** to meet complex challenges with an integrated approach and the best possible use of natural resources.

Desertification and Land Degradation Atlas of India

Context
- Minister of State for Environment, Forest and Climate Change, called for generating awareness towards preventing and restoring land degradation for healthier and sustainable ecosystems.

Desertification and Land Degradation Atlas of India 2020
- It has been published by Space Application Centre, ISRO, Ahmedabad.
- The Atlas provides state wise area of degraded lands for the time frame 2018-19.
- It also provides the change analysis for the duration of 15 years, from 2003-05 to 2018-19.
- Salient findings of this Atlas will be helpful in strengthening the envisaged National Action Plan for achieving land restoration targets by providing important baseline and temporal data and technical inputs.

India and UNCCD
- India **hosted the 14th session of Conference of Parties (COP 14)** of United Nations Convention to Combat Desertification (UNCCD) in September 2019.
- India is striving towards achieving the national commitments of Land Degradation Neutrality (LDN) and restoration of 26 Million ha of degraded land by 2030, which focus on sustainable and optimum utilisation of land resources.
  - **Land Degradation Neutrality (LDN)** has been defined by the Parties to the Convention as a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems.
- India has been at the forefront of bringing the issue of land degradation to the core of relevant international alliances for protection and conservation of environment.
- The government of India has adopted collective approach for making progress towards achieving the national commitments related to land restoration.

Namami Gange Programme

Context
- A tripartite Concession Agreement between National Mission for Clean Ganga (NMCG), Kolkata Metropolitan Development Authority (KMDA) and M/s. Maheshtala Waste Water Management Private Limited was signed for development of 35 MLD Sewage Treatment Plant for Maheshtala on Hybrid Annuity PPP mode.
- This project aims to take care of the existing sewerage problems in the town and the resultant sewage pollution in the Ganga.
- On implementation of the project there will be no discharge of untreated sewage from Maheshtala town into River Ganga thereby reducing pollution load in the river.

'Namami Gange Programme'
- It is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government in June

2014 with budget outlay of Rs.20,000 Crore to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of National River Ganga.

- Main pillars of the Namami Gange Programme are:-
  o Sewerage Treatment Infrastructure
  o River-Front Development
  o River-Surface Cleaning
  o Bio-Diversity
  o Afforestation
  o Public Awareness
  o Industrial Effluent Monitoring
  o Ganga Gram
- Its implementation has been divided into
  o **Entry-Level Activities** (for immediate visible impact),
  o **Medium-Term Activities** (to be implemented within 5 years of time frame) and
  o **Long-Term Activities** (to be implemented within 10 years).

Black softshell turtle

Context

- A major temple in Assam has signed a memorandum of understanding with two green NGOs, the Assam State Zoo cum Botanical Garden and the Kamrup district administration for long-term conservation of the rare freshwater black softshell turtle (Nilssonia nigricans).

Black softshell turtle conservation pact

- A vision document 2030 was also launched after Turtle Survival Alliance India and Help Earth signed the pact involving the Hayagriva Madhava Temple Committee.

- This conservation pact aims to restock the wild with viable, self-sufficient and genetically pure threatened turtle populations in the region.
- It offers assistance for the required improvement of husbandry of turtles kept in such ponds, for the long-term survival and existence of this endangered freshwater turtles.

Black softshell turtle

- It is a **species of freshwater turtle** found in India (**Assam**) and Bangladesh (Chittagong and Sylhet).
- The International Union for Conservation of Nature had in 2021 listed the turtle as **'critically endangered'.**
- Until sightings along the Brahmaputra River's drainage in Assam, the black softshell turtle was thought to be '**extinct in the wild'** and **confined only to ponds of temples in northeastern India and Bangladesh.**
- It does not enjoy legal protection under the Indian Wildlife (Protection) Act of 1972.
- It has traditionally been hunted for its meat and cartilage, traded in regional and international markets.

Turtle Survival Alliance (TSA):

- It was formed in 2001 as an International Union for Conservation of Nature (IUCN) partnership for sustainable captive management of freshwater turtles and tortoises.
- The TSA arose in response to the rampant and unsustainable harvest of Asian turtle populations to supply Chinese markets, a situation known as the Asian Turtle Crisis.
- TSA has become recognized as a global force for turtle conservation, capable of taking swift and decisive action on behalf of critically endangered turtles and tortoises.
- The TSA is a recognized force for turtle conservation globally. TSA's conservation actions utilize a three-pronged approach:
- Restoring populations in the wild where possible;
- Securing species in captivity through assurance colonies; and
- Building the capacity to restore, secure and conserve species within their range country.

The coelacanth

Context

- The coelacanth — a wondrous fish that was thought to have gone extinct along with the dinosaurs 66 million years ago found alive and well in 1938 off South Africa's east coast.

The coelacanth

- Coelacanths first appeared during the Devonian Period roughly 400 million years ago, about 170 million years before the dinosaurs.
- These large and nocturnal deep-sea fishes have a lifespan about five times longer than previously believed.
- It females carry their young for five years, the longest-known gestation period of any animal.
- It develops and grows at among the slowest pace of any fish and does not reach sexual maturity until about age 55.
- After being found alive, the coelacanth are dubbed as "living fossil".
- It is called a lobe-finned fish based on the shape of its fins, which differ structurally from other fish.
- The two extant species, both endangered, are the African coelacanth, found mainly near the Comoro Islands off the continent's east coast, and the Indonesian coelacanth.

Nipah virus

Context

- A cross-sectional survey by Indian Council of Medical Research-National Institute of Virology to study the prevalence of Nipah virus (NiV) in bats of India has picked up samples with the presence of antibodies against the Nipah virus in some bat species from a cave in Mahabaleshwar.

Need

- India has experienced four episodes of NiV outbreaks.
- A study in 2018 has identified many South East Asian countries including **Indian states as potential hotspots for the NiV disease.**
- NiV is on the **top-10 priority list pathogens** identified by the World Health Organization.

About NiV

- Nipah virus (NiV) is a **zoonotic virus**, meaning that it can **spread**
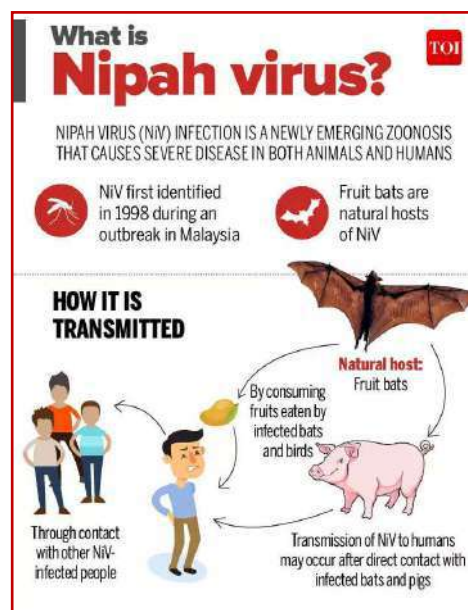
between animals and people.

- Fruit bats, also called flying foxes, are the animal reservoir for NiV in nature.
- Nipah virus is also known to cause illness in pigs and people.
- Infection with NiV is associated with encephalitis (swelling of the brain) and can cause mild to severe illness and even death.
- Outbreaks occur almost annually in parts of Asia, primarily Bangladesh and India.
- **Preventive ways:** Nipah virus infection can be **prevented by avoiding exposure to sick pigs and bats** in areas where the virus is present, and **not drinking raw date palm sap** which can be contaminated by an infected bat.
- During an outbreak, standard infection control practices can help prevent person-to-person spread in hospital settings.

Pygmy hogs

Context

- Eight captive-bred pygmy hogs, the **world's rarest and smallest wild pigs**, were released in the Manas National Park of western Assam.

Pygmy Hog Conservation Programme (PHCP)

- This is the second batch to have been reintroduced into the wild under the **Pygmy Hog Conservation Programme (PHCP)** in a year.
- The PHCP is a collaboration among Durrell Wildlife Conservation Trust of UK, Assam Forest Department, Wild Pig Specialist Group of International Union for Conservation of Nature and Union Environment Ministry and is currently being implemented by NGOs Aaranyak and EcoSystems India.
- The reintroduction programme began in 2008 with the Sonai-Rupai Wildlife Sanctuary (35 hogs), Orang National Park (59) and Barnadi Wildlife Sanctuary (22).
- By 2025, the PHCP plans to release 60 pygmy hogs in Manas.

Pygmy hog

- The pygmy hog is one of the very few mammals that build its own home, or nest, complete with a 'roof'.
- It is an indicator species, as its presence reflects the health of its primary habitat, the tall, wet grasslands of the region.
- One of the main reasons for its plummeting numbers is grassland degradation.
- It is a suid native to alluvial grasslands in the foothills of the Himalayas at elevations of up to 300 m (980 ft).
- Today, the only known population lives in Assam, India and possibly southern Bhutan.
- As the population is estimated at less than 250 mature individuals, it is listed as Endangered on the IUCN Red List.
- The pygmy hog is designated as a Schedule I species in India under the Wildlife Protection Act, 1972, and offences against them invite heavy penalties.

Euphlyctis Kerala'

Context

- New species of skittering frog discovered from surroundings of **Thattekkad bird sanctuary (Kerala)**.
- The new species is named as Euphlyctis Kerala in honour of the remarkable biodiversity of the State, which is also known for many endemic species of frogs.
- The new species is found in the fresh water bodies of the foothills of the Western Ghats, south of the Palakkad Gap.
- They are indicator species as they help to determine the health of fresh water.
- Some of the skittering frog species are **endemic to India.**
- As of now, Kerala is known to have 180 species of frogs.

Ramgarh Vishdhari wildlife sanctuary

Context

- **Rajasthan is poised to get its fourth tiger reserve** after **Ramgarh Vishdhari wildlife sanctuary** received a nod from the National Tiger Conservation Authority (NTCA)'s technical committee.

Ramgarh Vishdhari wildlife sanctuary

- The tigers were believed to have disappeared from the sanctuary in 1999.
- This reserve area falls under buffer zone of Ranthambore Tiger Reserve (RTR).
- The upgrade in the status is expected to strengthen the ongoing tiger conservation efforts in the state.
- In 2013, the Rajasthan government had upgraded Mukundra hills sanctuary as the third tiger reserve.
- The core area of the Ramgarh Vishdhari has eight villages. The sanctuary currently has leopards, sambhars, chitals, wildboars, smaller cats, caracals, chinkaras and nilgai.

The Saiga antelope

Context

- The Saiga antelope, which was classified as a **critically endangered species** by the International Union for Conservation of Nature in 2018 is making a comeback.

The Saiga antelope

- **Kazakhstan** is home to a majority of the world's Saiga.

- The population of the Saiga antelope has more than doubled in Kazakhstan since 2019. It rose from 3,34,000 to 8,42,000 since the last aerial survey.
- Around 2,00,000 antelopes were wiped out by a nasal bacterium that spread in unusually warm and humid conditions in 2015.
- The International Union for Conservation of Nature deems the Saiga to be among five **critically endangered antelope species**.
- The Saiga is known for its **distinctive bulbous nose.**

Threats to Saiga

- The threat of poaching is fuelled by the demand for the Saiga's horn in traditional Chinese medicine.
- **Climate change and the expansion of human activity** through farming and infrastructure projects are other threats to the Saiga.

The 'sea snot' outbreak

Context

- Turkey's Sea of Marmara, that connects the Black Sea to the Aegean Sea, has witnessed the largest outbreak of 'sea snot'. It has also been spotted in the adjoining Black and Aegean seas.

What is causing 'sea snot' in the seas of Turkey?

- 'Sea snot' is marine mucilage that is formed when algae are overloaded with nutrients as a result of water pollution combined with the effects of climate change.
- The nutrient overload occurs when algae feast on warm weather caused by global warming. Water pollution adds to the problem.
- Overproduction of phytoplankton caused by climate change and the uncontrolled dumping of household and industrial waste into the seas has led to the present crisis.
- The thick slimy layer of organic matter, which looks like a viscous, brown and foamy substance, has spread through the sea south of Istanbul and also blanketed harbours and shorelines.

It's affects on the marine ecosystem

- It has caused **mass deaths among the fish population**, and also killed other aquatic organisms such as corals and sponges.
- It could poison up all aquatic life, including fishes, crabs, oysters, mussels and sea stars.
- It **affects the livelihoods of fishermen.** As the sludge is getting collected in their nets, making them so heavy that they break or get lost.
- 'Sea snot' can cause an **outbreak of water-borne disease**s such as cholera in cities like Istanbul.
- Brown mucilage floating in the seas of Turkey is a sign of twin crisis of **pollution and global warming.**

Barnadi sanctuary

Context

- One of **Assam's smallest wildlife sanctuaries** could be the newest home of the tiger in the State.
- Wildlife specialists have the first photographic evidence of a tiger inhabiting the 26.22 sq. km Barnadi Wildlife Sanctuary.
- The tiger was captured in camera traps during an exercise.
- This small habitat is well connected to a corridor between the Royal Manas National Park and the Jomotshakngkha Wildlife Sanctuary.
- Barnadi was once connected to Assam's Manas National Park about 80 km to its west, but the area in between has been fragmented due to human habitation.
- This sanctuary is named after the **river Bornadi,** which flows on its western border.
- The sanctuary was established in 1980 to protect the **hispid hare and pigmy hog**
- To the east of Barnadi, along the India-Bhutan border are the Khalingduar Reserve Forests and Sonai-Rupai Wildlife Sanctuary where the captive-bred pygmy hog, the smallest and rarest species of wild pigs, was first rehabilitated.
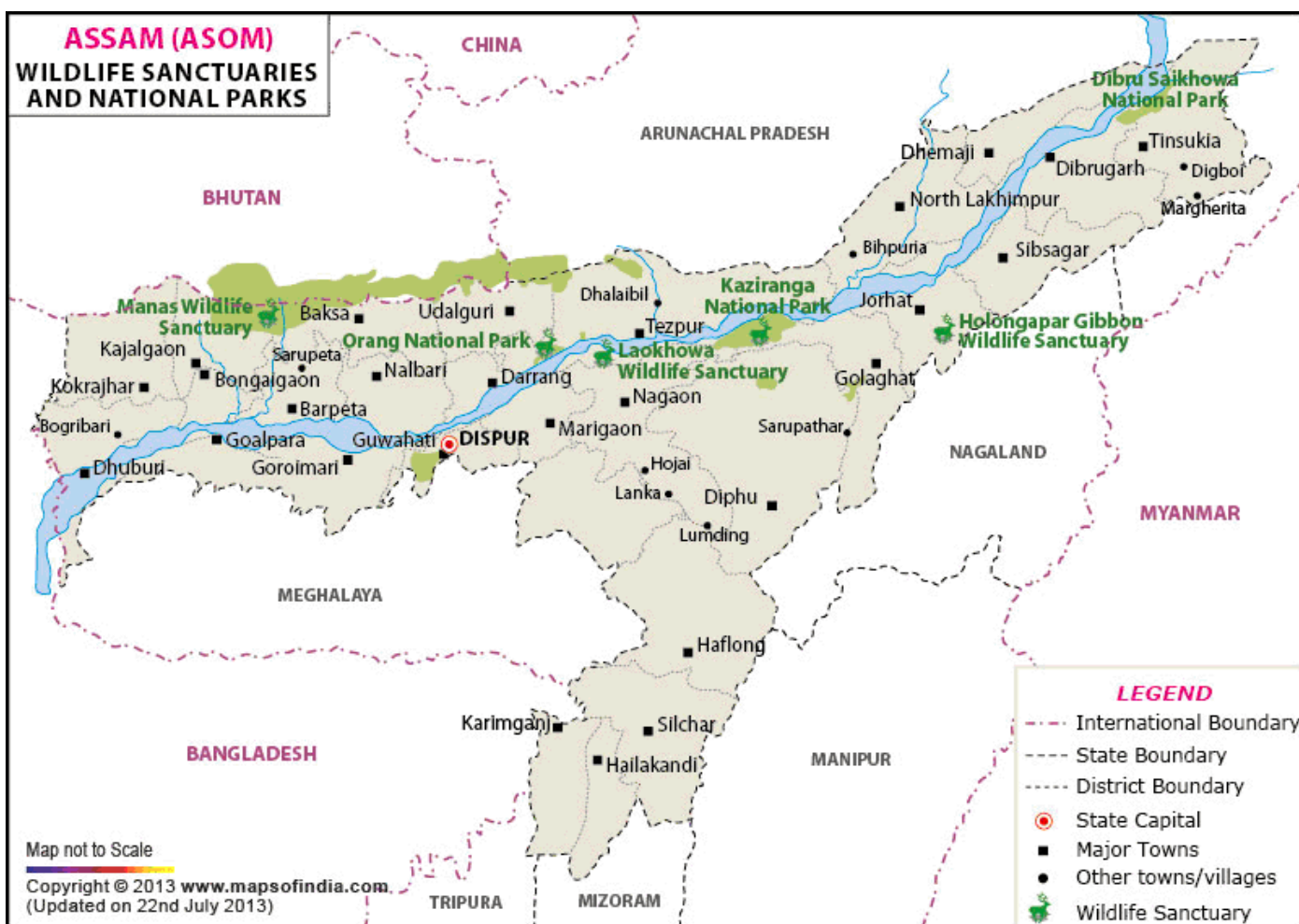
1. Consider the following statements regarding Khyal music:

1. Origin of this style was attributed to Amir Khusrau.
2. The musical compositions of khyal are called qawwalis.
3. It uses many words that are sung at a fast tempo.

Which of the above statements is / are correct?

a) 1 only   b) 2 only
c) 1, 2 & 3   d) 2 & 3 only

2. Consider the following statements regarding Sangam literature:

1. Puram were Abstract discussions on human aspects such as love.
2. Patinenkilkanakku is Oldest surviving Tamil poetry.
3. Tolkappiyam was authored by Tolkappiyar.

Which of the above statements is / are correct?

a) 1 only   b) 2 only
c) 1, 2 & 3   d) 2 & 3 only

3. Consider the following statements regarding Solar Winds Hack:

1. It is a state-sponsored attack.
2. Federal Governments are directly attacked under it.

Which of the above statements is / are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) Neither 1 nor 2

4. Consider the following statements regarding Cryptocurrencies:

1. They help in checking the corruption.
2. They are currently banned in India.
3. Bitcoin is the first decentralized cryptocurrency.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 only
c) 1 ,2 and 3   d) 2 and 3 only

5. Consider the following statements regarding Nano Urea Liquid:

1. GAIL has introduced the world's first Nano Urea Liquid for farmers across the world.
2. It can be used as a substitute for Urea.
3. The effectiveness of the Nano Urea Liquid is over 80 percent.

Which of the above statements is / are correct?

a) 1 only   b) 2 only

c) 1, 2 & 3   d) 2 & 3 only

6. Consider the following statements regarding Regional Rural Banks(RRB):

1. They were set up on the basis of the recommendations of the Narasimham Working Group.
2. They are required to provide 50% of their total credit as priority sector lending.
3. The largest share of its equity is held by the state government.

Which of the above statements is / are correct?

a) 1 only   b) 2 only
c) 1, 2 & 3   d) 2 & 3 only

7. Consider the following statements regarding Cost Push inflation:

1. Cost-push inflation is determined by supply-side factors.
2. It occurs when Aggregate Demand exceeds Aggregate Supply at Full employment level.
3. Cost-push inflation can only occur when demand is relatively inelastic.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 1 only
c) None of the above   d) 2 and 3 only

8. Consider the following statements regarding Fiscal Responsibility and Budget Management (FRBM) Act:

1. It aims to ensure inter-generational equity in fiscal management.
2. Act contains National calamity and Collapse of agriculture as ground for exemption of targets.
3. Tracking of tax revenue as a percentage of GDP has not been mandated by this act.

Which of the above statements is / are correct?

a) 1 only   b) 1 and 2 only
c) 1 ,2 and   3   d) 3 only

9. Consider the following statements regarding Open Skies Treaty:

1. It allows unlimited number of commercial flights between 2 countries.
2. It aims at building confidence among members through mutual openness

Which of the above statements is / are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) Neither 1 nor 2

10. **Consider the following statements regarding Craftsmen Training Scheme:**

1. It comes under the Ministry of Minority Affairs.
2. It aims to ensure a steady flow of skilled workers in different countries of the gulf.
3. Day to Day administration of the scheme is in the hands of the State.

Which of the above statements is / are correct?
a) None of the above   b) 2 only
c) 3 only   d) 1 and 3 only

11. **Consider the following statements:**

1. During independence, 75 percent of the total area sown in the country was devoted to the production of food crops.
2. Rabi crops are more reliable than Kharif ones.
3. The relative share of area under food crops have increased after independence.

Which of the above statements is / are correct?
a) 1 and 2 only   b) 1 only
c) 1, 2 and 3   d) 2 and 3 only

12. **Consider the following statements regarding woolen textiles industry:**

1. Rajasthan is the largest producer of wool in India.
2. India is the second-largest producer of wool in the world.
3. India has the largest sheep population in the world.

Which of the above statements is / are correct?
a) 1 only   b) 2 only
c) 1 , 2 and 3   d) 2 and 3 only

13. **Consider the following statements regarding Child Labour in India:**

1. Child under 14 years cannot be employed to perform any hazardous work.
2. According to Census 2011, maximum child labour are employed in urban areas.

Which of the above statements is / are correct?
a) 1 only   b) 2 only
c) Both 1 & 2   d) Neither 1 nor 2

14. **Which of the given Directive Principles of State Policies can be classified as Gandhian Principles?**

1. Provision for just and humane conditions of work.
2. Prohibit the consumption of intoxicating drinks.
3. Organise village panchayats and endow them with necessary powers.
4. Promotion of cooperative societies.

Which of the above statements is / are correct?
a) 2 and 4 only   b) 2 only
c) 1, 2 and 3 only   d) 2, 3 and 4 only

15. **Consider the following statements regarding Parliamentary Privileges:**

1. Parliamentary privileges are currently governed by law made by Parliament.
2. Members cannot be questioned by an outside body for any vote given inside the House.
3. They are extended to Attorney General of India as well.

Which of the above statements is / are correct?
a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

16. **Consider the following statements regarding SDG India Index 2020-21:**

1. It was topped by Maharashtra.
2. It was launched in 2018.
3. Country's overall SDG score decreased from the previous year.

Which of the above statements is / are correct?
a) 1 only   b) 2 only
c) 2 and 3   d) All of the above

17. **Consider the following statements regarding SATAT initiative:**

1. It aims to set up Compressed Biogas production plants.
2. It will lead to reduction in import of natural gas and crude oil.

Which of the above statements is / are correct?
a) 1 only   b) 2 only
c) Both 1 & 2   d) Neither 1 nor 2

18. **Consider the following statements regarding Bardoli Satyagraha:**

1. It was led by Mahatma Gandhi.
2. It was against the increase of taxes in the Bombay Presidency.
3. Satyagraha resulted in the decrease in revenue.

Which of the above statements is / are correct?
a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

19. **Consider the following statements regarding Lord Cornwallis:**

1. He divested the Zamindars of their policing powers.
2. He founded a Sanskrit College at Benaras.
3. He introduced the Permanent Settlement of land revenue in Bengal.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

20. **Consider the following statements regarding satellite Internet and LEO Technology:**

1. It provides stronger signals and faster speeds.
2. Overall investment in creating infrastructure is very less.
3. They are placed at a 36,000 km orbit.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

21. **Consider the following statements regarding Bar Council of India:**

1. It is a statutory body.
2. The Council elects its own Chairman for a period of two years.
3. It recognises universities whose degree in law shall be a qualification for enrolment as an advocate.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

22. **Consider the following statements regarding National Commission for Backward Classes:**

1. Chairpersons shall all be appointed by the President by warrant under his hand and seal.
2. While inquiring into any complaint it has all the powers of a civil court.
3. Its mandate is to oversee the interests of the economically weaker sections (EWS) of society.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

23. **Consider the following statements regarding The Lokpal and Lokayukta Act, 2013:**

1. 50% of the members shall be from judicial background.

2. The Speaker of Lok Sabha is a member of the selection committee.
3. The Chairperson and every Member hold office for a term of six years.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

24. **Consider the following statements regarding National Green Corps:**

1. It is an initiative of the Ministry of Defence.
2. It aims to promote logical and independent thinking among children.

Which of the above statements is / are correct?

a) 1 only   b) 2 only
c) Both 1 & 2 only   d) Neither 1 nor 2

25. **Consider the following statements regarding National Board for Wildlife (NBWL):**

1. It is chaired by the Minister of Environment and Climate Change.
2. It was formed under the Wildlife (Protection) Act, 1972.
3. No alteration of boundaries in national parks and wildlife sanctuaries can be done without the approval of the NBWL.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

26. **Consider the following statements regarding YounTab scheme:**

1. It has been launched for New Delhi.
2. It targets students of class 9 to 12.
3. It encourages digital learning and bridge the digital divide

Which of the above statements is / are correct?

a) 1 only   b) 2 and 3 only
c) 1 and 3 only   d) 2 only

27. **Consider the following statements regarding Small Financial Banks:**

1. They are restricted in the area of operations.
2. Foreign shareholding is not allowed in them.
3. They can be a business correspondent for another bank.

Which of the above statements is / are correct?

a) 2 only   b) 2 and 3 only
c) 1 only   d) None of the above

28. **Consider the following statements Ghaggar river:**

1. It originated in Uttrakhand.
2. Kaushalya and Markanda rivers are its main tributaries.
3. It eventually dries up in the Great Indian (Thar) Desert.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

29. **Consider the following statements regarding Government e-Marketplace (GeM):**

1. It is administered by the Ministry of Finance.
2. It aims to enhance transparency, efficiency and speed in public procurement.

Which of the above statements is / are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) Neither 1 nor 2

30. **Consider the following statements regarding Protection of Children from Sexual Offences (POCSO) Act:**

1. It is gender neutral.
2. It provides for the establishment of Special Courts for trial of offences under the Act.
3. Media has been barred from disclosing the identity of the child.

Which of the above statements is / are correct?

a) 1 and 2 only   2) 2 and 3 only
c) 1 and 3 only   d) All of the above

31. **Consider the following statements regarding Akbar:**

1. The sale of wines and spirits was restricted.
2. He completely prohibited the practice of sati throughout the Mughal empire.
3. Widow remarriage was legalised.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 and 3 only
c) 1 only   d) All of the above

32. **Consider the following statements regarding Zamindars under Mughals:**

1. Milkiyat lands were cultivated for the private use of zamindars.
2. They were prohibited from maintaining an armed contingent due to fear of rebellion.

3. They had the hereditary right of collecting land revenue.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

33. **Consider the following statements regarding CAR-T cell therapy:**

1. It has been proposed as a cure to COVID-19 Delta Strain.
2. It is developed by IIT Bombay.

Which of the above statements is / are correct?

a) 1 only   b) 2 only
c) Both 1 & 2   d) Neither 1 nor 2

34. **Consider the following statements regarding YUVA Scheme:**

1. It aims at training sportspersons for olympics.
2. Target age group is less than 30 years. Scholarships will be provided to each selected person.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

35. **Consider the following statements regarding fuel cells:**

1. Water and heat are the only products.
2. Electricity produced is in the form of Alternating current (AC).
3. Hydrogen has a high energy density as compared to other fuels.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 and 3 only
c) 1 only   d) All of the above

36. **Consider the following statements regarding Fast Breeder Reactor (FBR):**

1. It generates more nuclear fuels than they consume while generating power.
2. It uses Natural UO_2 as fuel matrix to produce electricity.
3. Liquid sodium is used as coolant.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 and 3 only
c) 1 only   d) All of the above

37. Consider the following statements regarding Geostationary orbit and satellites:

1. They orbit once a day and move in the same direction as the Earth.
2. Geostationary orbit requires a parabolic antenna.

Which of the above statements is / are correct?

a) 1 only   b) 2 only

c) Both 1 & 2   d) Neither 1 nor 2

38. Consider the following statements regarding Surakshit Hum Surakshit Tum Abhiyaan:

1. It has been launched by the Ministry of Health and Family Welfare.
2. It aims at providing home-care support to COVID-19 patients.

Which of the above statements is / are correct?

a) 1 only   b) 2 only

c) Both 1 & 2   d) Neither 1 nor 2

39. Which of the following ocean currents are warm currents?

1. Canary Current
2. East Australian Current
3. Mozambique Current
4. California Current
5. Gulf Stream

Which of the above statements is / are correct?

a) 1, 2 and 5 only   b) 2, 3 and 4 only

c) 1, 4 and 4 only   d) 2, 3 and 5 only

40. Consider the following statements regarding westerlies:

1. They become more effective during the summer season and less effective during winter season in the northern hemisphere.
2. They blow from the subtropical high-pressure belts to the subpolar low-pressure belts.
3. They are more vigorous in the northern hemisphere.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 and 3 only

c) 2 only   d) All of the above

41. Consider the following statements regarding latitudes:

1. Average distance between 2 latitudes is 1000 km.
2. All latitudes are parallel to the Equator. Horse latitudes is a region of subtropical high pressure zone.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 and 3 only

c) 2 only   d) All of the above

42. Consider the following statements regarding Pakke Tiger Reserve:

1. It is located in Manipur.
2. It is bounded by the Kameng River in the west and north.
3. Hornbills can be seen in this tiger reserve.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 and 3 only

c) 2 only   d) All of the above

43. Consider the following statements regarding Permanent settlement:

1. It was introduced by Warren Hastings.
2. Zamindars got 20% of the total produce while the rest was given to the East India Company.
3. The rights of the zamindars were hereditary and transferable.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only

c) 3 only   d) All of the above

44. Consider the following statements regarding Gandhi-Irwin Pact of 1931:

1. It granted the right to make salt for consumption to villages along the coast.
2. Demand for public inquiry into police excesses was accepted.
3. Congress agreed to discontinue the Civil Disobedience Movement.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 and 3 only

c) 2 only   d) All of the above

45. Consider the following statements regarding All India Survey on Higher Education 2019-20:

1. It is released by NITI Aayog.
2. Gross Enrolment Ratio in Higher Education in 2019-20 is only 20 percent.
3. Gender Parity Index in higher education has shown improvement.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 3 only

c) 1 and 2 only   d) All of the above

46. Consider the following statements:

1. Operation Olivia is an initiative of Indian Coast Guard to protect Olive Ridley turtles.
2. IUCN Status of Olive Ridley Turtle is Endangered.
3. They are found in warm waters.

Which of the above statements is / are correct?

a) 1 & 3 only   b) 2 & 3 only

c) 2 only   d) All of the above

47. Consider the following statements regarding Marginal Cost of Funds Based Lending Rate (MCLR):

1. It is determined at regular intervals by the Reserve Bank of India.
2. It is the minimum interest rate of a bank below which it normally cannot lend.
3. This methodology replaces the base rate system.

Which of the above statements is / are correct?

a) 1 & 2 only   b) 2 & 3 only

c) 3 only   d) All of the above

48. Consider the following statements regarding Liquidity Adjustment Facility:

1. It is extended by the Reserve Bank of India to the scheduled commercial banks.
2. It is available only to Scheduled Commercial Banks.
3. The interest rate paid by the RBI is called the reverse repo rate.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only

c) 1 and 3 only   d) All of the above

49. Consider the following statements regarding PENCIL Portal:

1. It aims at achieving the target of child labour free society.
2. It was launched by the Ministry of Women and Child Development.

Which of the above statements is / are correct?

a) 1 only   b) 2 only

c) Both 1 & 2   d) Neither 1 nor 2

50. Consider the following statements regarding President's rule:

1. The President can assume to himself the powers vested in the state high court.

2. President either suspended or dissolved the state legislative assembly.

Which of the above statements is / are correct?

a) 1 only   b) 2 only

c) Both 1 & 2   d) Neither 1 nor 2

51. Consider the following statements regarding Lok Adalats:

1. There is no court fee payable when the matter is filed in Lok Adalat.
2. Social workers can act as mediators/conciliators.
3. The jurisdiction of the Permanent Lok Adalats is upto Rs. One Lakh.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only

c) 3 only   d) None of the above

52. Consider the following statements regarding Chief Election Commissioner (CEC):

1. Appointment is made by the President of India.
2. It has a fixed tenure of 5 years.
3. Constitution has debarred the retiring Chief Election Commissioner from any further appointment by the government.

Which of the above statements is / are correct?

a) 1 only   b) 3 only

c) 1 and 3 only   d) All of the above

53. Consider the following statements regarding Jal Shakti Abhiyan – 2:

1. It aims to create a database of all water bodies in the country by geo tagging them.
2. It covers rural areas only.
3. The Ministry of Jal Shakti, is the nodal ministry for its implementation.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only

c) 1 and 3 only   d) All of the above

54. Which of the following are examples of Variable winds?

1. Trade winds
2. Monsoon
3. Polar winds
4. Mountain and valley breezes
5. Land and sea breezes

Select the correct code:

a) 1, 2 and 5 only   b) 2 and 3 only'

c) 2, 4 and 5 only   d) All of the above

55. Consider the following statements regarding Ganga river system:

1. It originates in Tibet near Mansarovar Lake.
2. The Ganga enters the plains at Devprayag.
3. Alaknanda and Bhagirathi are the two headstreams of Ganga.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 3 only   d) None of the above

56. Consider the following statements regarding Tsunami:

1. Winds that blow across the surface of the ocean is a major cause of Tsunami.
2. The speed of the Tsunami wave depends on the depth of the water.
3. Wavelength of a Tsunami wave can range from 100 km to 500 km.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 3 only   d) None of the above

57. Consider the following statements regarding National Biodiversity Authority (NBA):

1. It has been established under the Environment Protection Act 1986.
2. NBA regulates access to India's biological resources and associated knowledge by Indians and non-Indians.
3. It is headquartered in New Delhi.

Which of the above statements is / are correct?

a) 1 and 3 only   b) 2 and 3 only
c) 2 only   d) None of the above

58. Consider the following statements regarding Mauryan art and culture:

1. They introduced stone masonry.
2. Marble was used on an extensive scale.
3. Intensive use of iron was prevalent.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

59. Consider the following statements regarding Jet Streams:

1. Jet Streams develop where air masses of different temperatures meet.
2. Jet Streams are present mainly in the equatorial region.

3. They are associated with the formation of Noctilucent clouds.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

60. Consider the following statements regarding Sickle Cell Disease (SCD):

1. It is caused due to deficiency of Vitamin D.
2. Blood flow and oxygen is blocked from reaching all parts of the body.
3. In the long run, damage to organs including the liver, kidney, lungs is possible.

Which of the above statements is / are correct?

a) 1 and 2 only   b) 2 and 3 only
c) 1 and 3 only   d) All of the above

ANSWERS

1. a	16. b	31. a	46. a
2. b	17. c	32. c	47. b
3. a	18. b	33. b	48. c
4. a	19. d	34. b	49. a
5. d	20. c	35. a	50. b
6. a	21. d	36. a	51. a
7. a	22. a	37. a	52. a
8. b	23. a	38. b	53. c
9. b	24. b	39. d	54. c
10. c	25. b	40. c	55. c
11. a	26. b	41. b	56. b
12. a	27. d	42. b	57. c
13. a	28. b	43. c	58. c
14. d	29. b	44. a	59. c
15. b	30. d	45. b	60. b