

OFFICERS' Pulse

Coverage.

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**CURRENT AFFAIRS
MONTHLY**

**THE PULSE OF UPSC AT
YOUR FINGER TIPS.**



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SCHEMES

1. SVAMITVA

About the scheme

- SVAMITVA (Survey of villages and mapping with improvised technology in village areas) scheme is a collaborative effort of the **Ministry of Panchayati Raj**, State Panchayati Raj Departments, State Revenue Departments and **Survey of India**.
- It aims to provide rural people with the **right to document their residential properties** so that they can use their property for economic purposes.
- The scheme is for surveying the land parcels in rural inhabited areas using Drone technology.

Objectives

- The outcome from the scheme would include updating the record of rights in the revenue/property registers and issuance of property cards to the property owners. This would facilitate **monetisation of rural residential assets** for credit and other financial services.
- It will also lead to creation of **accurate land records** for rural planning and determination of **property tax**.
- Through the SVAMITVA scheme, the government hopes that **property disputes and legal cases will be reduced**.
- Other gram panchayats and community assets like village roads, ponds, canals, open spaces, school, anganwadi, health sub-centres etc will also be surveyed and GIS maps will be created. These maps can be used to prepare better quality gram panchayat development plans.

Coverage

- There are about 6.62 lakh villages in the country which will be eventually covered in this scheme. The entire work

is likely to be spread over a period of four years (2020 -2024).

- Presently, the pilot phase is being approved for the year 2020-21. Pilot Phase will extend to **six pilot States** (Haryana, Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh and Uttarakhand).

Why in News?

- The Ministry of Panchayati Raj has issued guidelines for the SVAMITVA scheme.

About Survey of India

- The National Survey and Mapping Organization, also known as the Survey of India, is the oldest scientific department of the Government of India.
- Set up in 1767, it is under the **Department of Science & Technology**.
- As the nation's **Principal Mapping Agency**, Survey of India ensures that the country's domain is explored and mapped suitably, provides base maps for expeditious and integrated development and ensures that all resources contribute with their full measure to the progress, prosperity and security of the country.

2. Pradhan Mantri Garib Kalyan Yojana

About the scheme

- In March 2020, the Union government announced Rs 1.70 Lakh Crore relief package under Pradhan Mantri Garib Kalyan Yojana for the poor to help them fight the battle against CoronaVirus.
- Following are the components of the Pradhan Mantri Garib Kalyan Package:
 - **Insurance cover of Rs 50 Lakh** per health worker fighting COVID-19

- 80 crore poor people to get **5 kg wheat or rice and 1 kg of preferred pulses** for free every month for the next three months
- 20 crore women Jan Dhan account holders to get **Rs 500 per month** for next three months
- Increase in **MNREGA wage** to Rs 202 a day from Rs 182 to benefit 13.62 crore families
- An **ex-gratia of Rs 1,000** to 3 crore poor senior citizen, poor widows and poor disabled
- The first instalment of Rs 2,000 due in 2020-21 will be front-loaded and paid in April 2020 itself under the **PM KISAN Yojana**.
- Central Government has given orders to State Governments to use **Building and Construction Workers Welfare Fund** to provide relief to Construction Workers.

- To provide fair price to the MFP gatherers for the produce collected by them and enhance their income level.
- To ensure sustainable harvesting of MFPs.
- The Scheme will have a huge social dividend for MFP gatherers, majority of whom are tribals.
- It is a holistic scheme for development of MFP trade including its value chain and necessary infrastructure at local level.
- The MSP scheme seeks to establish a framework to ensure fair returns for the produce collected by tribals, assurance of buying at a particular price, primary processing, storage, transportation etc while ensuring sustainability of the resource base.
- **TRIFED**, under the Ministry of Tribal Affairs, is the nodal agency for the implementation of the scheme.

Why in News?

- More than 30 crore poor people have received financial assistance of Rs 28,256 crore through Direct Benefit Transfer under the Pradhan Mantri Garib Kalyan Yojana.

3. MSP for Minor Forest Produce

About the scheme

- The Central Government had introduced the Minimum Support Price (MSP) for a select list of MFP through "**Mechanism for Marketing of Minor Forest Produce (MFP) through Minimum Support price and development of Value Chain of MFP**" Scheme in 2011 to provide a social safety net to these underprivileged forest dwellers, and to aid in their empowerment.
- The scheme has been started with following objectives

Significance of MFP

- Minor Forest Produce means **all non-timber forest produce** of plant origin and will include bamboo, canes, fodder, leaves, gums, waxes, dyes, resins and many forms of food including nuts, wild fruits, Honey, Lac, Tusser etc.
- MFP is a major source of livelihood for tribals living in forest areas. Tribals derive 20-40% of their annual income from MFP.

Why in News?

- The Ministry of Tribal Affairs has announced inclusion of 23 additional Minor Forest Produce items and stipulation of their MSP under the "Mechanism for Marketing of MFP through MSP and development of value chain of MFP" scheme.
- This decision enhancing the **coverage from 50 to 73 items** comes in view of the exceptional and very difficult

circumstances currently prevailing in the country on account of the COVID-19 Pandemic.

INITIATIVES

1. Chakmas and Hajongs

Who are Chakmas and Hajongs?

- The Chakmas and Hajongs are ethnic people who lived in the **Chittagong Hill Tracts**, most of which are located in Bangladesh. Chakmas are predominantly Buddhists, while Hajongs are Hindus.
- They fled erstwhile East Pakistan in 1964-65 after being displaced by a hydel power project. In addition, they also faced religious persecution as they were non-Muslims and did not speak Bengali.
- They entered India between 1964 and 1969 and settled in the North-East Frontier Agency, now **Arunachal Pradesh**. This makes them eligible for citizenship under the **Citizenship (Amendment) Act, 2019**.
- However, Arunachal is among the states exempted from the Citizenship (Amendment) Act, 2019 since it has an **Inner line permit** to regulate entry of outsiders. Most of their citizenship applications are thus pending with the Central government.
- *(Refer Pulse December edition for details on Citizenship (Amendment) Act, 2019)*

What is the issue?

- The Chakmas and Hajongs do not have ration cards as the Arunachal Pradesh State government had seized those through an order in 1991.
- As a result, the two communities have been forced to buy rice at a high price while other vulnerable sections have been paying Rs 5 per kg as per the economic package announced by the State government. This has resulted in starvation of members of the community.

Why in News?

- A Delhi-based rights body has sought Prime Minister Narendra Modi's intervention in ensuring food for the

Chakma and Hajong communities in Arunachal Pradesh.

2. Arogya Setu App

About Arogya Setu App

- Arogya Setu is a mobile app developed by the **National Informatics Centre** under the **Ministry of Electronics and Information Technology** to help citizens identify their risk of contracting Covid-19.
- Arogya Setu is designed to keep the user informed in case s/he has crossed paths with someone who has tested positive.
- The tracking is done through **Bluetooth & GPS reference points**, which can show the user's interaction with anyone who has tested positive.
- The app alerts are accompanied by instructions on how to self-isolate and what to do in case you develop symptoms.
- There is also a self-testing tool where the users can assess their health voluntarily by answering a few questions.

Concerns about source code

- Concerns were raised previously about not making the **source code** (software programming code) of the App public.
- The closed source architecture of the app **violates transparency** principles.
- An open source code allows researchers and experts to test the architecture and suggest measures to correct vulnerabilities.
- For instance, **Singapore's TraceTogether app** was made open source.

Why in News?

- The government announced opening the source code of its coronavirus tracking app, Aarogya Setu.
- The government reiterated that **transparency, privacy and security** have been the core design principle of Aarogya Setu.
- Opening the source code to the software developer community signifies the Government of India continuing principal to these commitments.

What is a source code?

- Source code is the **fundamental component of a computer program** that is created by a programmer.
- It is a set of **step-by-step instructions to the computer** that are in a **human readable format**.
- Source code will be converted into a **machine readable format**- called **object code** - by the process of **compilation**.
- Source codes are written in Computer programming languages such as **Python, Java, C++, Swift, SQL**, etc.

What is an open source code?

- The term open source refers to something people can modify and share because its design is publicly accessible.
- Open source software is software with source code that **anyone can inspect, modify, and enhance**.
- Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly.
- More importantly, open source code allows researchers and experts to **test the architecture** and **suggest measures to correct cybersecurity vulnerabilities**.

About NIC

- National Informatics Centre (NIC) was established in 1976, as an attached office

under the Ministry of Electronics and Information Technology.

- The NIC provides infrastructure to help support the delivery of government IT services and the delivery of some of the initiatives of Digital India.

3. National Infrastructure Pipeline

What is it?

- To achieve the GDP of \$5 trillion by 2024-25, India needs to spend about \$1.4 trillion (100 lakh crore) over these years on infrastructure. To implement an infrastructure program of this scale, the government has envisaged the National Infrastructure Pipeline (NIP).
- An inter-ministerial Task Force was set up in September 2019 under the chairmanship of Secretary (DEA), Ministry of Finance to draw up the plan for the NIP from FY 2019-20 to FY 2024-25.

Objectives of NIP

- NIP is expected to enable well-prepared infrastructure projects which will create jobs, improve ease of living, and provide equitable access to infrastructure for all, thereby making growth more inclusive.
- NIP also intends to facilitate supply side interventions in infrastructure development to boost short-term as well as the potential GDP growth. Improved infrastructure capacities will also drive competitiveness of the Indian economy.

Why in News?

- The Task Force on National Infrastructure Pipeline has recently submitted its Final Report on NIP for FY 2019-25.

Key Highlights

- The final report projects a total infrastructure investment worth **Rs 111 lakh crore** during the financial period 2020-25.

- Sectors such as energy (24%), roads (18%), urban (17%) and railways (12%) amount to around 71% of the projected infrastructure investments.
- The **Central Government (39 per cent)** and **State Governments (40 per cent)** are expected to have almost equal share in funding of the projects followed by the **Private Sector (21 per cent)**.
- The Task Force has recommended that three Committees be setup:
 - a Committee to monitor NIP progress and eliminate delays;
 - a Steering Committee in each Infrastructure ministry level for following up implementation; and
 - a Steering Committee in the Department of Economic Affairs for raising financial resources for the NIP.
- The NIP project database would be hosted on **India Investment Grid (IIG)** to provide visibility to the NIP and help in its financing with prospective investors able to access updated project level information.

About India Investment Grid

- India Investment Grid is an initiative of the **Department for Promotion of Industry and Internal Trade (DPIIT)** under the Ministry of Commerce & Industry and **Invest India**.
- It is an interactive and dynamic national web portal showcasing information on investible projects across India. With the help of IIG, investors can view, follow and register interest in projects across states, sectors and government schemes in India.
- *Invest India, set up in 2009, is a non-profit venture under the Department for Promotion of Industry and Internal Trade. It is India's official agency dedicated to investment promotion and facilitation.*

4. VidyaDaan 2.0

What is it?

- VidyaDaan 2.0 is conceptualized as a common national program for individuals & organizations across the country to **donate/contribute e-learning content for school education** to ensure continuity of quality learning.
- VidyaDaan 2.0 has a content contribution tool that provides a structured interface for the contributors to register and contribute different types of e-learning content (such as, explanation videos, presentations, competency-based items, quizzes, etc.), for any grade (from grade 1 to 12), for any subject as specified by the states/UTs.
- Contributions can be made by educationists, subject experts, schools, government and non-government organizations, individuals, etc.
- The content will be used on **DIKSHA app** to help millions of children across the country to continue their learning anytime and anywhere.

Why in News?

- The **Ministry of Human Resource Development** has launched the VidyaDaan 2.0 programme.

DIKSHA portal

- The **Ministry of Human Resource Development** launched the Digital Infrastructure for Knowledge Sharing (DIKSHA) Portal in 2017 for providing a digital platform to teachers giving them an opportunity to learn and train themselves and connect with the teacher community.
- DIKSHA has more than 80,000 content pieces in 15 different Indian languages already for grades 1 to 12, which includes **content for educators as well as for students**, and is in the form of explanation videos, presentations,

question banks, lesson plans, learning outcomes etc.

5. e-GramSwaraj Portal

About the portal

- The egramswaraj.gov.in Portal will mark the **complete digitization of the villages to strengthen e-governance in Panchayati Raj institutions** in the whole country.
- The portal is a single interface on which the details will be listed panchayat wise. The portal will help in preparing and executing Gram Panchayat Development Plans.

Benefits of the portal

- Monitoring and recording all the work via Gram Swaraj Portal will help speed-up the implementation of projects in village areas.
- As it will contain the details of ongoing development works and the fund allocated for the projects, one can access and know about the groundwork.
- The works of the Ministry of Panchayati Raj will be accessible through Gram Swaraj Portal.
- The Gram Swaraj Portal will provide a boost in transparency by decentralized planning of development projects, with progress reports updates and increased accountability.

Who can create an account on the Gram Swaraj Portal?

- Anybody can create an account on the Gram Swaraj Portal and know about the developmental works of villages.

Why in News?

- Prime Minister Narendra Modi has launched a unified e-GramSwaraj Portal on the occasion of National Panchayati Raj Day (April 24).

6. YUKTI

About YUKTI

- The portal has been launched to **monitor and record initiatives**, especially related to Covid-19, taken by various departments of the **Ministry of Human Resource Development and academic institutions**.
- YUKTI will cover various initiatives and efforts of institutions in academics and research, social initiatives by institutions and measures taken for the betterment of students.
- It will also allow various institutions to **share their strategies** for various challenges which are there because of the unprecedented situation of Covid-19 and other future initiatives.
- The portal will also establish a **two-way communication channel** between the ministry and the institutions so that the necessary support system can be provided to the institutions.

Why in News?

- The **Ministry of Human Resource Development** has launched the YUKTI (Young India Combating COVID with Knowledge, Technology and Innovation) portal.

7. CollabCAD

What is it?

- CollabCAD is a collaborative network, computer enabled software system, providing a total engineering solution from 2D drafting and detailing to 3D product design.
- The aim of this initiative is to provide a **platform to students of Atal Tinkering Labs (ATLs)** across the country to create and modify 3d designs with free flow of creativity and imagination.
- This software would also enable students to create data across the network and concurrently access the same design data for storage and visualization.

Why in News?

- **Atal Innovation Mission (AIM), NITI Aayog and National Informatics Centre (NIC)** jointly launched CollabCAD.

About Atal Innovation Mission

- The Atal Innovation Mission is a flagship initiative to promote innovation and entrepreneurship across the country.
- The Mission has been set up under **NITI Aayog**, in accordance with the Finance Minister's declaration in the 2015 Budget Speech.
- At the school level, AIM is setting up state of the art **Atal Tinkering Labs** in schools across all districts across the country which provide tinkering spaces to children to hone their innovative ideas and creativity.

8. Samadhan challenge

What is it?

- It is an online challenge to **test the ability of students to innovate**.
- The students participating in this challenge will search and develop such measures that can be made available to the government agencies, health services, hospitals and other services for **quick solutions to the Coronavirus epidemic and other such calamities**.
- Apart from this, through this "Samadhan" challenge, work will be done to make citizens aware, to motivate them, to face any challenge, to prevent any crisis and to help people get livelihood.

Why in News?

- The **innovation cell of the Ministry of Human Resources Development and AICTE** has launched a mega ONLINE challenge, SAMADHAN.

About AICTE

- All India Council for Technical Education (AICTE) is a **statutory body** and a

national-level council for technical education, under the **Ministry of Human Resource Development**.

- AICTE was established in 1945 as an advisory body but later in 1987 given statutory status by an Act of Parliament. It is responsible for proper planning and coordinated development of the **technical education and management education system** in India.
- AICTE as a body is responsible for **accrediting all postgraduate and graduate programs**, under specific categories of technology for Indian institutions.

9. Price Monitoring & Resource Unit

What's in the news?

- The National Pharmaceutical Pricing Authority has set up the Price Monitoring & Resource Unit (PMRU) in the Union Territory of Jammu & Kashmir to **track violation of prices of essential drugs and medical devices** under the Drugs Price Control Order.
- PMRUs have already been set up by the drug price regulator NPPA in 11 states.

Functions of PMRU

- The PMRU, a registered society, will function under the direct control and supervision of the State Drug Controller of Jammu & Kashmir.
- The unit will be **funded by National Pharmaceutical Pricing Authority (NPPA)** for its recurring and non-recurring expenses.
- The PMRU will help NPPA and State Drug Controller in **ensuring availability and accessibility of medicines at affordable prices**.
- It is also expected to organise seminars, training programs and other information, education and communication (IEC) activities in the

areas of availability and affordability of medicines for all.

About NPPA

- The National Pharmaceutical Pricing Authority was established in 1997 as an independent body of experts to regulate the pricing of drugs.
- It has been constituted as an attached office of the **Department of Pharmaceuticals (DoP), Ministry of Chemicals & Fertilizers**.
- The Authority has been entrusted with the task of
 - Fixation/revision of prices of pharmaceutical products (bulk drugs and formulations),
 - Enforcement of provisions of the Drugs (Prices Control) Order (DPCO).
 - Monitoring of the prices of controlled and decontrolled drugs in the country.
- The NPPA currently fixes prices of drugs placed in the **National List of Essential Medicines (NLEM)** under **Schedule-I of the DPCO**.
- Non-scheduled drugs are allowed an increase of up to **10 per cent in prices every year**, which is monitored by the NPPA.
- NPPA can **also fix the price for non-scheduled drugs** by invoking extraordinary powers in public interest, under the Drugs (Prices Control) Order, 2013.

10. Challenge COVID-19 Competition (C3)

About NIF

- National Innovation Foundation-India (NIF) is an **Autonomous body of the Department of Science and Technology** set up in 2000.
- It is India's national initiative to **strengthen the grassroots**

technological innovations and outstanding traditional knowledge.

- Its mission is to help India become a creative and knowledge-based society by expanding policy and institutional space for grassroots technological innovators.

Why in News?

- The NIF has invited innovative citizens to participate in its Challenge Covid-19 Competition (C3) and share ideas that can supplement the efforts of the government in slowing the outbreak.
- Total incubation support will be given to the technologies which are able to address the problem.

11. NIDHI-PRAYAS

About NIDHI

- **National Initiative for Developing and Harnessing Innovations (NIDHI)** is an umbrella programme conceived and developed by the **Department of Science & Technology**, for nurturing ideas and innovations into successful startups.
- The programme's focus is to build an innovation driven entrepreneurial ecosystem with an objective of socioeconomic development through wealth and job creation.

About NIDHI-PRAYAS

- It is one of the components of NIDHI.
- Under PRAYAS (Promoting and Accelerating Young and Aspiring innovators & Startups) programme, Technology Business Incubators (TBI) are supported with grants to support innovators and entrepreneurs with grants for 'Proof of Concept' and developing prototypes.
- This support shall allow the innovators to try their ideas without fear of failure, hence allowing them to reach a stage where they have a ready product and

are willing to approach incubators for commercialization.

- Hence NIDHI-PRAYAS can be considered a **pre-incubation initiative** and a source of pipeline for incubators.

Why in News?

- An air purifying technology developed by an incubatee company under the 'Nidhi Prayas' programme has shown potential to offer an effective solution to the country's fight against the coronavirus COVID-19 contagion by reducing the viral load of the infected areas.
- 1000 units of this new air purifier would soon be ready for installation in various hospitals across Maharashtra.

How does it work?

- The air purifier generates **negatively charged ions** at approximately hundred million per 8 seconds (10 ions per sec).
- The negative ions **form clusters around microparticles** such as airborne mould, corona or influenza viruses, bacteria among other pollutants and **renders them inactive** through a complex chemical reaction by creating highly reactive hydroxyl radicals and atmospheric detergents (hydroxyl groups are composed of one hydrogen atom bonded to one oxygen atom and denoted as -OH or HO-).
- The detergent property thus generated by the purifier aids the breakdown of the outer protein of the allergens, viruses and bacteria, thus checking airborne diseases and increasing the body's resistance to possible infections.

12. Global education coalition

What's in the news?

- UNESCO has launched a global education coalition which seeks to **facilitate inclusive learning opportunities for children and youth**

during this period of sudden and unprecedented educational disruption caused by COVID-19 pandemic.

Significance

- More than 1.5 billion learners in 192 countries are affected by COVID-19 school closures.
- UNESCO warned that **girls will be the worst hit** due to school closures as it will lead to increased drop-out rates, further entrench gender gaps in education and increased risk of sexual exploitation, early pregnancy and early and forced marriage.
- UNESCO has called for policy-makers and practitioners to look into lessons from the past crises to address the challenges faced by girls.

UNESCO

- The United Nations Educational, Scientific and Cultural Organization (UNESCO) was constituted as a **specialized agency** of the United Nations that was outlined in a constitution signed November 16, 1945. The constitution entered into force in 1946.
- Its purpose is to contribute to peace and security by promoting international collaboration through education, science, culture and communication.
- UNESCO has 193 member countries (including **India**) and it pursues its objectives through five major programs: education, natural sciences, social and human sciences, culture, and communication and information.
- The agency's permanent headquarters are in Paris, France.

13. Global Initiative on Sharing All Influenza Data

About GISAID

- The Global Initiative on Sharing All Influenza Data (GISAID) platform was launched by the WHO in 2008.
- The GISAID Initiative promotes the **international sharing** of all influenza virus sequences, related clinical and epidemiological data associated with human viruses, and geographical as well as species-specific data associated with avian and other animal viruses.
- The data help researchers understand how the viruses evolve, spread and potentially become pandemics.
- The Initiative ensures that **open access** to data in GISAID is provided **free-of-charge** and to everyone, provided individuals identify themselves and agree to uphold the GISAID sharing mechanism governed through its **Database Access Agreement**.

Why in News?

- India has shared nine whole genome sequences of the novel coronavirus (SARS-CoV-2) with the GISAID.
- All the sequences have been shared by the Pune-based **National Institute of Virology**.

Significance

- Sequencing the genome of SARS-CoV-2 will help us understand where the virus came from and how it spread.
- For instance, by sequencing the genome of the virus isolated from an Indian patient, it will become possible to know if the virus had come from China or any other country.

ENVIRONMENT

1. Dehing Patkai Elephant Reserve

About Dehing Patkai Elephant Reserve

- It is a part of Dehing Patkai Wildlife Sanctuary located in **Assam**.
- Dehing is the name of the river that flows through the reserve and Patkai is the hill at the foot of which the sanctuary lies.
- The Reserve consists of wet tropical evergreen Assam valley forests. It is often referred to as "**The Amazon of the east**" owing to its large area and thick forests.
- The Dehing Patkai Forest is one of the most important forests of Assam in terms of orchid diversity. So far, 101 species of orchids within 45 genera have been recorded there.



Why in the news?

- The National Board for Wildlife has given permission for coal mining in Dehing Patkai Elephant Reserve.

National Board for Wildlife

- The National Board for Wildlife (NBWL) is constituted by the Central Government under the **Wildlife (Protection) Act, 1972**. The NBWL is under the **Ministry of Environment, Forest and Climate Change (MoEFCC)**.

- The role is “advisory” in nature and advises the Central Government on framing policies and measures for conservation of wildlife in the country.
- Primary function of the Board is to promote the conservation and development of wildlife and forests. NBWL has power to review all wildlife-related matters and approve projects in and around national parks and sanctuaries.
- The National Board for Wildlife has 47 members with the **Prime Minister in the Chair**. The Minister in charge of the Ministry of Environment & Forests in the Central Government is the Vice-Chairperson.
- The standing committee of NBWL is chaired by the Minister of Environment, Forest and Climate Change.
- Recommendation of the NBWL is **mandatory for alteration of the boundary of a protected area** such as National Park, Wildlife sanctuary, Tiger reserve, etc.

2. Fall Armyworm attack

What is it?

- Fall Armyworm (FAW) (*Spodoptera frugiperda*) is an **insect pest** that feeds on more than 80 crop species, causing damage to economically important cultivated cereals such as maize, rice, sorghum, and also to legumes as well as vegetable crops and cotton.
- It is native to **tropical and subtropical regions of the Americas**.
- Fall Armyworm has destroyed large areas of maize in Africa since it first landed there in early 2016 leading to economic losses of up to \$5.5 million per year from 10 of the highest maize producing countries of Africa. The **Food**

and Agricultural Organization (FAO) has already declared FAW as a food security threat in the African continent.

- FAW represents a serious threat to food security and livelihoods of millions of smallholder farmers.



Why in News?

- Recently, severe fall Armyworm attacks have been reported in Assam.
- In 2019, several states such as Chhattisgarh, Karnataka, Andhra Pradesh, Tamil Nadu, Maharashtra and Gujarat reported infestation of fall Armyworm.

About FAO

- The Food and Agriculture Organization is a **specialized agency** of the United Nations that leads international efforts to defeat hunger.
- Its goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.
- Established in 1945, FAO's members include over 194 countries worldwide (including **India**).
- FAO is headquartered in Rome, Italy.

3. Petersberg Climate Dialogue

About the dialogue

- Since 2010, the **Government of Germany** has been organizing the Petersberg Climate Dialogue as an annual forum for discussing

international climate negotiations and advancing climate action on the ground.

- It brings together ministers and heads-of-state and acts as a bridge between implementation and negotiation to address the climate crisis.
- The Co-Chair of the Dialogue, alongside Germany, is the country presiding over the next Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC).

Why in News?

- The 11th edition of the Petersberg Climate Dialogue (PCD XI) was held recently for the first time as a **video conference**. Over 30 climate ministers and high-level representatives participated in the summit.

Key takeaways

- The dialogue focused on ways to enable a clean, climate-friendly, resilient recovery from the COVID-19 pandemic. Many acknowledged that COVID-19 and the impacts of climate change are exacerbating each other.
- Representing India, Union Minister for Environment, Forest and Climate Change, Prakash Javadekar said that as the world is unitedly engaged in finding a vaccine for novel Coronavirus, we should have Climate Technology as open source which must be available at affordable cost.
- Mr Javadekar stressed on the issue of **climate finance** and said the world now needs more. He said, we must plan for 1 trillion dollar in grants to the developing world immediately.

4. Anak Krakatau

What is it?

- Anak Krakatau is a volcanic island in the **Sunda Strait** between the Java and

Sumatra islands in Indonesia's Lampung province.

- Anak Krakatau, whose name means "Child of Krakatau," emerged following the monumental eruption of Mount Krakatau in 1883 which triggered a period of global cooling.



Why in News?

- Indonesia's Anak Krakatau volcano erupted recently.
- It is the longest eruption since the explosive collapse of the island caused a deadly tsunami in 2018.

5. Mass bleaching in Great barrier reef

What are coral reefs?

- Coral reefs are large underwater structures composed of the skeletons of colonial **marine invertebrates called coral**.
- The coral species that build reefs are known as **hermatypic, or "hard," corals** because they extract **calcium carbonate (CaCO₃)** 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. These types of corals are flexible organisms often resembling plants and trees and include species such as sea fans and sea whips.

Symbiotic relationship

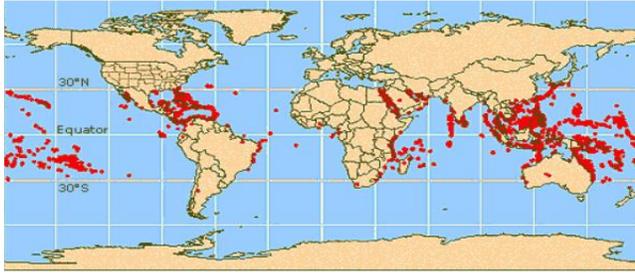
- Most reef-building corals contain photosynthetic algae, called **zooxanthellae**, that live in their tissues. The corals and algae have a **symbiotic relationship**.
- The coral provides the algae with a protected environment and compounds they need for photosynthesis. In return, the algae produce oxygen and help the coral to remove wastes. The presence of the zooxanthellae also provides colored pigments to help protect the coral's white skeleton from sunlight.

Significance of Coral reefs

- Coral reefs only occupy 0.1% of the area of the ocean but they support 25% of all marine species on the planet.
- Because of the diversity of life found in the habitats created by corals, reefs are often called the "**rainforests of the sea.**"

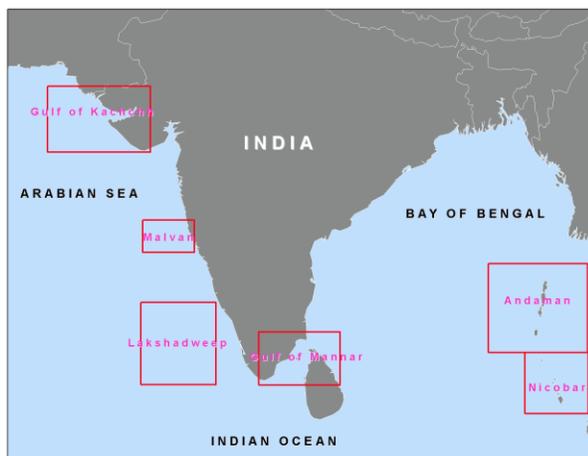
Geographical distribution

- The reef-building corals prefer to grow at
 - **depths shallower than 30 m (100 ft), or**
 - where the **temperature range is between 16-32°C, and**
 - **light levels are high**
- The majority of reef building corals are found within tropical and subtropical waters. These typically occur between **30°N and 30°S of the equator**.
- 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 in India

- Coral reefs are present in the areas of **Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar, Lakshadweep Islands and Malvan coast of Maharashtra.**



Main threats to coral reefs

- **Climate change:** Warmer water temperatures can result in **coral bleaching**. When water is too warm, corals expel the algae (zooxanthellae) living in their tissues causing the coral to turn completely white. This is called **coral bleaching**. When a coral bleaches, it is not dead. Corals can survive a bleaching event, but they are under more stress and are subject to mortality.
- **Ocean acidification:** Ocean acidification is caused by rising levels of CO₂ in the atmosphere. Oceans absorb some of the CO₂. As CO₂ enters the ocean, it reacts with water increasing hydrogen ion concentration (thus decreasing ocean pH) and decreasing the carbonate ion concentration. A reduction in carbonate

ions affects the **Calcification process** of Corals.

- **Calcification** is the process by which corals form their skeletons by combining calcium ions and carbonate ions to create calcium carbonate.
- **Pollution:** Urban and industrial waste, plastics, sewage, agrochemicals, and oil pollution are poisoning reefs. Some pollutants, such as sewage and runoff from farming, increase the level of nitrogen in seawater, causing an overgrowth of algae.
- **Sedimentation:** Erosion caused by construction, mining, logging, and farming is leading to increased sediment in rivers. This ends up in the ocean, where it can smother corals by depriving them of the light needed to survive.
- **Destructive fishing practices:** These include cyanide fishing, blast or dynamite fishing, bottom trawling, and muro-ami (banging on the reef with sticks). **Bottom-trawling** is one of the greatest threats to cold-water coral reefs.

Why in News?

- A new survey has found that Australia's Great Barrier Reef has experienced its **most widespread bleaching event on record**.
- This marks the **third mass bleaching event** on the reef in just the last five years and scientists say that the rapid warming of the planet due to human emissions of heat-trapping gases are to blame.
- For the first time, severe bleaching has struck all three regions of the Great Barrier Reef -- the northern, central and now large parts of the southern sectors.
- The bleaching event this year is not only the largest, in terms of the area affected, but also **second most severe on record**

with the damage likely to be lasting and irreparable.

About Great Barrier Reef:

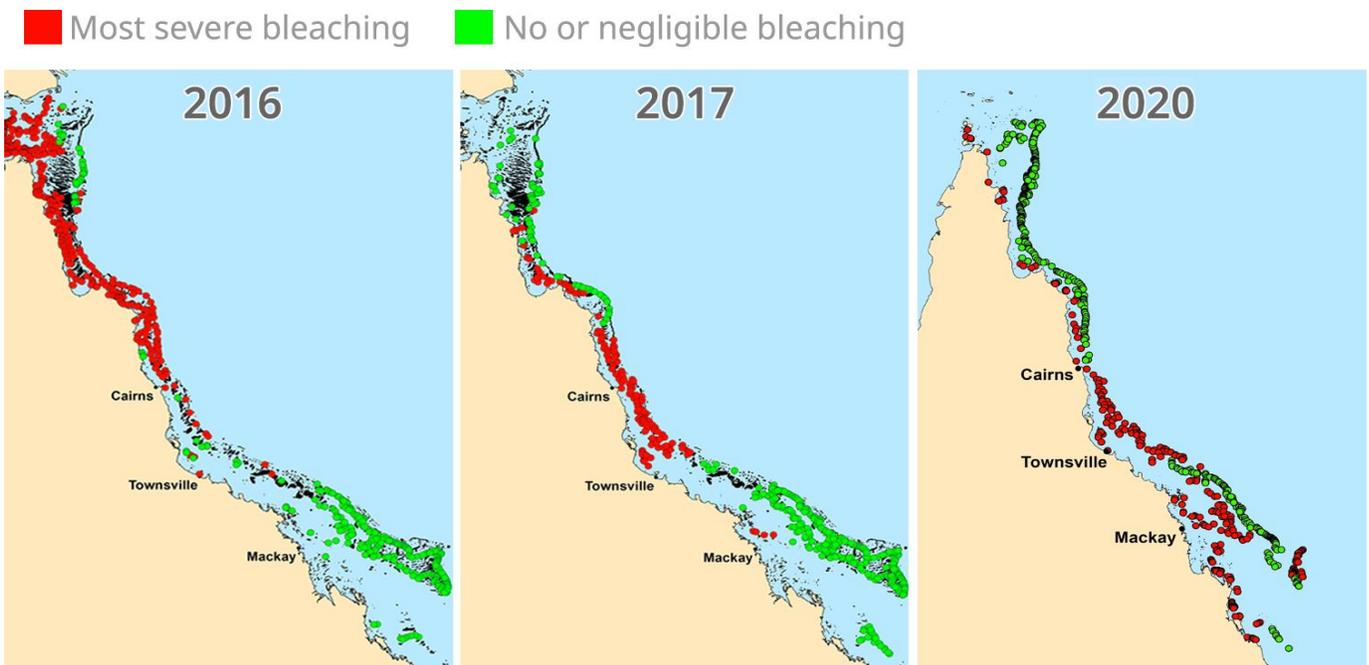
- The Great Barrier Reef is the world's largest coral reef stretching for over 2,300 kilometers.
- The reef is located in the Coral Sea, off the coast of Queensland, Australia.
- The Great Barrier Reef can be seen from outer space and is the world's biggest single structure made by living organisms.
- It supports a wide diversity of life and was selected as a World Heritage Site in 1981.

Causes of mass bleaching in Great barrier reef:

- This year, February saw the **highest monthly sea temperatures ever recorded** on the reef since records from the Australian Bureau of Meteorology began in 1900. Many reefs experienced temperatures that were 3°C above the normal summer maximum.
- Past bleaching events have typically occurred in years with a strong El Nino-Southern Oscillation, a climate phenomena that can increase the odds of a host of extreme weather events around the globe.
- But as summers get hotter year on year in Australia, scientists found that bleaching can occur **even when El Nino is not active**.

The last three mass bleaching events

The severity of the last three mass bleaching events on the Great Barrier Reef



Source: ARC Centre of Excellence for Coral Reef Studies

Impacts

- In 2016, bleaching killed more than half of the shallow-water corals on the

northern region of the Great Barrier Reef. A second mass bleaching in 2017 meant the coral could not recover.

- Great Barrier Reef is home to more than 1,500 species of fish, 411 species of hard corals and dozens of other species.
- It takes about a decade for the fastest growing corals to make a full recovery. As bleaching events become more frequent, there are fewer opportunities

for the corals to rebound-- and that will be devastating not only for the region's biodiversity, but for the thousands of people whose life and livelihood depend on the reefs.

ORGANISATIONS

1. Central Vigilance Commission

Central Vigilance Commission (CVC)

- CVC was set up in 1964 on the recommendations of the Committee on Prevention of Corruption, headed by **K. Santhanam**, as the apex vigilance institution under the Central Government.
- The Commission was given **statutory status** by the enactment of "The Central Vigilance Commission Act, 2003".
- The CVC is not controlled by any Ministry/Department. It is an **independent body** which is only responsible for the Parliament.
- The CVC is **not an investigating agency**. The CVC either gets the investigation done through the CBI or through the Departmental Chief Vigilance Officers.
- The Commission, while conducting the inquiry, shall have all the powers of a **Civil Court** with respect to certain aspects.

Composition:

- CVC consists of a **Central Vigilance Commissioner (Chairperson) and not more than two Vigilance Commissioners (Member)**.
- The Central Vigilance Commissioner and the Vigilance Commissioners are **appointed by the President** on the recommendations of a **Selection Committee** consisting of
 - the Prime Minister (Chairperson),
 - the Minister of Home Affairs (Member) and
 - the Leader of the Opposition in the House of the People (Member).
- The term of office of the Central Vigilance Commissioner and the Vigilance Commissioners is **four years** from the date on which they enter their

office or **till they attain the age of 65 years**, whichever is earlier.

Why in News?

- Retired bureaucrat Sanjay Kothari was sworn in as the next Central Vigilance Commissioner by President Ram Nath Kovind.

2. Organisation of Islamic Cooperation

About OIC

- The Organisation of Islamic Cooperation (OIC), established in 1969, is the second largest inter-governmental organisation in the world after the UN, with a membership of 57 states in four continents.
- The OIC describes itself as the collective voice of the Muslim world, and its stated objective is to safeguard and protect the interests of the Muslim world in the spirit of promoting international peace and harmony among various people of the world.
- The majority of its member states are **Muslim-majority countries**, while others have significant Muslim populations, including several African and South American countries.
- It also has five observer members, including Russia and Thailand.
- **India is neither a member nor an observer of the OIC.**

Why in News?

- Organisation of Islamic Cooperation expressed concerns on discrimination and violence on a certain minority group in India amidst the COVID-19 crisis.

3. WHO

About WHO

- The World Health Organization is a **specialized agency** of the United Nations (UN) established in 1948 to further international cooperation for improved public health conditions.
- It is headquartered in Geneva, Switzerland.
- Working with 194 Member States (including **India**), its stated goal is to ensure "**the highest attainable level of health for all people**".

Where does WHO get its funding from?

- It is funded by a large number of countries, philanthropic organisations, United Nations organisations etc.
- **Voluntary donations** from member states contribute 35.41%, **assessed contributions** (dues countries pay in order to be a member of WHO) are 15.66%, **philanthropic organisations** account for 9.33%, **UN organisations** contribute about 8.1%; the rest comes from myriad sources.
- Countries decide how much they pay and may also choose not to.
- The US contributes almost 15% of the WHO's total funding and almost 31% of the member states' donations. India contributes 1% of member states' donations.

Why in News?

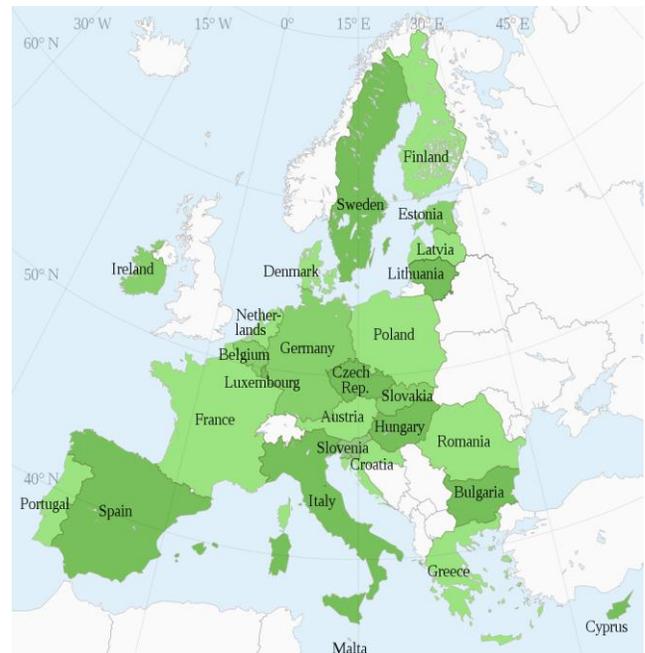
- U.S. President Donald Trump has ordered a freeze on funding for the WHO alleging mismanagement of the coronavirus crisis by the organization.

4. European Union

About EU

- The European Union (EU) is a unique **economic and political union** between 27 European countries.
- The **United Kingdom**, which had been a founding member of the EU, left the organization in 2020.

- The EU was created by the **Maastricht Treaty**, which entered into force on November 1, 1993. The treaty was designed to enhance European political and economic integration by creating a single currency (the euro), a unified foreign and security policy, and common citizenship rights and by advancing cooperation in the areas of immigration, asylum, and judicial affairs.
- Additionally, the **Treaty of Lisbon**, enacted in 2009, gave the EU more broad powers that included being authorized to sign international treaties, increase border patrol, and other security and enforcement provisions.
- EU's headquarters is currently located in Brussels, Belgium.
- Currently, the euro is the official currency of 19 out of 27 EU member countries which together constitute the **Eurozone**, officially called the **euro area**.



Why in News?

- EU member states agreed to a 500 billion euro emergency plan to tackle the COVID-19 pandemic.

5. World Bank

About World Bank

- The World Bank is an international organization dedicated to providing financing, advice, and research to developing nations to aid their economic advancement.
- Currently, the World Bank has two stated goals that it aims to achieve by 2030.
 - The first is to **end extreme poverty** by decreasing the number of people living on less than \$1.90 a day to below 3% of the world population.
 - The second is to **increase overall prosperity** by increasing income growth in the bottom 40% of every country in the world.
- The World Bank and International Monetary Fund (IMF) were founded simultaneously in **1944** at the United Nations Bretton Woods Conference in the United States to support European and Asian countries in post-war reconstruction efforts.
- The IMF and the World Bank are called **Bretton Woods twins** and are headquartered in Washington, D.C.

Structure of the World Bank

- The World Bank has expanded to become known as the World Bank Group with **five cooperative organizations**.
 - **International Bank for Reconstruction and Development (IBRD)**: an institution that provides debt financing to governments that are considered middle income.
 - **International Development Association (IDA)**: a group that gives interest-free loans to the governments of poor countries.
 - **International Finance Corporation (IFC)**: focuses on

the private sector and provides developing countries with investment financing and financial advisory services.

- **Multilateral Investment Guarantee Agency (MIGA)**: an organization that promotes foreign direct investments in developing countries.
- **International Centre for Settlement of Investment Disputes (ICSID)**: an entity that provides arbitration on international investment disputes.
- At present, the World Bank Group has 189 member countries (including **India**).

Why in News?

- The World Bank Group has approved a fast-track \$1 billion India COVID-19 Emergency Response and Health Systems Preparedness Project.
- The project will help prevent and detect the disease and respond to the pandemic and strengthen the country's public health preparedness.
- It is the largest-ever health sector support from the bank to India.

6. World Food Programme

About World Food Programme:

- The World Food Programme (WFP) is the **food-assistance branch of the United Nations** and the world's largest humanitarian organization addressing hunger and promoting food security.
- Assisting almost 100 million people in around 83 countries each year, the WFP responds to emergencies making sure food reaches where it is needed, especially in times of civil strife and natural disasters.
- In India, WFP has moved from providing direct food aid to providing technical

assistance and capacity building services to the Government of India.

- Established in 1961, WFP is headquartered in **Rome**, Italy.

Why in News?

- The World Food Programme has recently warned that the number of people facing acute food insecurity stands to rise to 265 million in 2020, up by 130 million from the 135 million in 2019, as a result of the economic impact of COVID-19.

7. International platform on sustainable finance

About IPSF

- International platform on sustainable finance (IPSF) was launched in 2019, as part of the **international efforts to meet the Paris targets**.
- It was launched by public authorities from Argentina, Canada, Chile, China, **India**, Kenya, Morocco and the European Union, representing almost half of the world's greenhouse gas emissions.
- The IPSF acts as a forum for facilitating exchanges and, where relevant,

coordinating efforts on initiatives and approaches to environmentally sustainable finance.

- The International Platform aims to:
 - Exchange and disseminate information to promote best practices in environmentally sustainable finance;
 - Compare the different initiatives and identify barriers and opportunities to help scale up environmentally sustainable finance internationally;
 - While respecting national and regional contexts, enhance international coordination where appropriate on environmentally sustainable finance issues. Where appropriate, some willing members could strive to align initiatives and approaches.

Why in News?

- Recently, Norway joined the International Platform on Sustainable Finance.

AGRICULTURE

1. Kisan Sabha App

About the app

- Kisan Sabha app aims to resolve the problems related to the agricultural supply chain and to provide the most economical and timely logistics support to the farmers and increase their profit margins by minimizing interference of middlemen and directly connecting with the institutional buyers.
- It will also help in providing best market rates of crops by comparing nearest mandis, booking of freight vehicles at cheapest cost thereby giving maximum benefit to the farmers.
- The primary objective of Kisan Sabha is to **connect farmers to the supply chain and freight transportation management system.**

Key Features

- The Kisan Sabha portal **connects the farmers, transporters, Service providers** (like pesticides/ fertilizer/ dealers, cold store and warehouse owner), mandi dealers, customers (like big retail outlets, online stores, institutional buyers) and other related entities for timely and effective solutions.
- The portal acts as a **single stop for every entity related to agriculture**, be they a farmer who needs better price for the crops or mandi dealer who wants to connect to more farmers or truckers who invariably go empty from the mandis.
- Kisan Sabha app also works for people in the **agriculture services sector** such as dealers of fertilizers/ pesticides, who can reach out to more farmers for their services.
- It would also prove to be useful for those associated with cold stores or godowns. Kisan Sabha also provides a **platform for**

people who want to buy directly from the farmers.

- Kisan Sabha has **6 major modules** taking care of Farmers/Mandi Dealers/Transporters/Mandi Board Members/ Service Providers/Consumers.

Rationale behind the launching of the App:

- In the present situation of COVID 19 pandemic, farmers are looking for help in their harvest reaching the market, seed/ fertilizer procurement for next season crop etc. A robust supply chain management is urgently required to facilitate the timely delivery of the product at the best possible prices.
- The overall agriculture market is not well organized and a lot of produce gets wasted or is being sold at very low rates. Based on this current prevailing situation, the Kisan Sabha App was developed.

Why in News?

- The **Council of Scientific and Industrial Research-Central Road Research Institute (CSIR-CRRI)** has launched the Kisan Sabha App.

About CSIR

- The Council of Scientific and Industrial Research (CSIR) is an autonomous body registered under the Societies Registration Act, 1860.
- It was established in 1942 by a resolution of the Central Legislative Assembly with the objective of developing new tools and applications for the industrial segment of the country and thus providing extra impetus to the scientific and technological progress of the country.
- The **Prime Minister** of India acts as the ex-officio president of CSIR.
- CSIR is headquartered in New Delhi.

CSIR-CRRI

- It was established in 1952 as a constituent laboratory of Council of Scientific and Industrial Research.
- The CRRI is located in New Delhi and conducts research and development in

the areas of design, construction, maintenance and management of roads and airport runways.

ECONOMY

1. Index of Eight Core Industries

About ICI

- The monthly Index of Eight Core Industries (ICI) is a **production volume index**.
- The objective of the ICI is to provide an advance indication on production performance of industries of 'core' nature before the release of Index of Industrial Production (IIP) by the Central Statistics Office.
- These industries are likely to impact on general economic activities as well as industrial activities.
- The Eight Core Industries- **Electricity, steel, refinery products, crude oil, coal, cement, natural gas and fertilizers**- comprise 40.27 per cent of the weight of items included in the IIP.
- **Industry Weight (In percentage)**
 - Petroleum & Refinery production - 28.04
 - Electricity generation - 19.85
 - Steel production - 17.92
 - Coal production - 10.33
 - Crude Oil production - 8.98
 - Natural Gas production - 6.88
 - Cement production - 5.37
 - Fertilizers production - 2.63
- ICI is released by the **Office of Economic Advisor**, under the Ministry of Commerce and Industries. The base year of the ICI is **2011-12**.

Why in News?

- India's eight core sectors contracted by a record 6.5% in March, reflecting the early impact of the COVID-19 pandemic and the subsequent nationwide lockdown.

2. GI Tag

About GI Tag

- A geographical indication (GI) is a sign used on products that have a **specific geographical origin** and possess qualities or a reputation that are due to that origin. In order to function as a GI, a sign must identify a product as originating in a given place.
- It is used for **agricultural, natural and manufactured goods**. Darjeeling tea became the first GI tagged product in India.
- The registration of GI is valid for **10 years** after which it needs to be renewed.

Legislations

- In India, GI is given under the **Geographical Indications of Goods (Registration and Protection) Act, 1999**.
- The Act is administered by the **Controller General of Patents, Designs & TradeMarks, GI (CGPDTM-India)** under the Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry.
- India enacted its GI legislation to comply with India's obligations under the Trade-Related Aspects of Intellectual Property Rights (**TRIPS**) agreement.
- GI registration gives to the registered proprietor and its authorized users, the legal right to the exclusive use of the GI and also the right to obtain relief in case of its infringement.
- GI is a **collective intellectual property right** and is thus owned by all the producers within the defined GI territory unlike intellectual properties like patent and trademark which are owned by an individual or a business entity.

Why in News?

- **Kashmir saffron**, which is cultivated and harvested in the **Karewa (highlands) of Jammu and Kashmir**, has been given the Geographical Indication tag by the Geographical Indications Registry.

Significance

- Iran is the largest producer of saffron and India is a close competitor. With the GI tag, Kashmir saffron would gain more prominence in the export market.
- Kashmir saffron is renowned globally as a spice. It rejuvenates health and is used in cosmetics and for medicinal purposes. It has been associated with traditional Kashmiri cuisine and represents the rich cultural heritage of the region.
- It is the **only saffron in the world** grown at an altitude of 1,600 m to 1,800 m AMSL (above mean sea level).

3. Intellectual property rights

What are Intellectual property rights?

- Intellectual property rights are the rights given to persons over the **creations of their minds**. They usually give the creator an exclusive right over the use of his/her creation for a certain period of time.
- Intellectual property rights are traditionally divided into **two main categories**:
- **Copyright and rights related to copyright**: i.e. rights granted to authors of literary and artistic works, and the rights of performers, producers of phonograms and broadcasting organizations. The main purpose of protection of copyright and related rights is to encourage and reward creative work.
- **Industrial property**: This includes:
 - the protection of distinctive signs such as **trademarks** and **geographical indications**, and

- industrial property protected primarily to stimulate innovation, design and the creation of technology. In this category fall **inventions** (protected by **patents**), **industrial designs** and **trade secrets**.

- Globally, Intellectual property rights are governed by two organizations: **WTO** (by its TRIPS agreement) & **WIPO**.

TRIPS

- The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is an international legal agreement between all the member nations of the **World Trade Organization (WTO)**.
- The Agreement, which came into effect on 1 January 1995, is a comprehensive multilateral agreement on intellectual property.
- The TRIPS Agreement is often described as **one of the three “pillars” of the WTO**, the other two being trade in goods and trade in services.
- To facilitate the implementation of the TRIPS Agreement, the Council for TRIPS concluded with WIPO an **agreement on cooperation between WIPO and the WTO**, which came into force on 1 January 1996.

WIPO

- The World Intellectual Property Organization (WIPO) is a **United Nations specialized agency** which seeks to develop a balanced and accessible International Intellectual Property system.
- The origins of WIPO go back to 1883 and 1886 when the **Paris Convention** for the Protection of Industrial Property and the **Berne Convention** for the Protection of Literary and Artistic Works, respectively, were concluded.

- Both Conventions provided for the establishment of an "International Bureau". The two bureaus were united in 1893 and, in 1970, were replaced by the WIPO, by virtue of the WIPO Convention.
- It is headquartered in Geneva. Currently, the WIPO includes 193 member-states (including **India**).

Why in News?

- The US has released its Annual Special 301 Report.
- It is prepared annually by the **Office of the United States Trade Representative (USTR)** that identifies trade barriers to United States companies and products due to the intellectual property laws, such as copyright, patents and trademarks, in other countries.

Why is it important?

- The report says that India is on the '**Priority Watch List**' of the USTR. Priority Watchlist countries are judged by the USTR as having serious intellectual property rights deficiencies that require increased USTR attention.
- In a warning to India and various other countries, the USTR said that governments should use **compulsory licenses** only in extremely limited circumstances and after making every effort to obtain authorisation from the patent owner on reasonable commercial terms and conditions.

Key terms

- A **copyright** protects original works of authorship including literary, dramatic, musical, and artistic works, such as poetry, novels, movies, songs, computer software, and architecture.
- A **trademark** is a word, phrase, symbol, and/or design that identifies and distinguishes the source of the

goods/services of one party from those of others. Some examples include brand names, slogans, and logos.

- A **geographical indication (GI)** is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. In order to function as a GI, a sign must identify a product as originating in a given place.
- A **patent** is a right granted to an inventor by the government that permits the inventor to exclude others from making, selling or using the invention for a period of time. Patentable materials include machines, manufactured articles, industrial processes, and chemical compositions.
- **Industrial design** right is a form of intellectual property right which protects the visual design of objects. An industrial design consists of the creation of a shape, configuration or composition of pattern or color, containing aesthetic value.
- **Trade secrets** consist of information and can include a formula, pattern, compilation, program, device, method, technique or process. To meet the most common definition of a trade secret, it must be used in business, and give an opportunity to obtain an economic advantage over competitors who do not know or use it.
- **Compulsory licenses** are authorizations given to a third-party to make, use or sell a particular product or use a particular process which has been

patented, without the need of the permission of the patent owner.

- This concept is recognised at both national as well as international levels, with express mention in both (Indian) Patent Act, 1970 and TRIPS Agreement. There are certain pre-requisite conditions which need to be fulfilled if a compulsory license is to be granted in favour of someone.

4. Centre cuts non-urea fertilizer subsidy

Background

- In India, **urea** (a nitrogen based fertiliser) is the most commonly used fertiliser because it is highly subsidised.
- The excessive use of nitrogenous fertilisers has led to a **distortion in the soil nutrient ratio**. Against the ideal NPK (Nitrogen-Phosphorus-Potassium) consumption ratio of **4:2:1**, the actual ratio in 2017-18 was **6.10:2.46:1**.
- Indiscriminate use of nitrogenous fertilizers is detrimental to the soil and the crop.
- It also pollutes the groundwater. The nitrogen from fertilizers, which is converted to nitrate by the bacteria in the soil, leaches into the groundwater and washes out of the soil surface, entering streams and rivers.

Nutrient based Subsidy scheme

- In order to promote balanced fertilization of soil the **Ministry of Chemicals and Fertilizer** launched the Nutrient based Subsidy (NBS) scheme in 2010.
- Under the scheme, a fixed amount of subsidy decided on an annual basis, is provided on each grade of subsidised **Phosphatic & Potassic (P&K)**

fertilizers depending on its nutrient content.

Why in News?

- The Centre has cut the subsidy for non-urea fertilizers (P&K fertilisers) this year to Rs 22,186 crore under the nutrient-based subsidy scheme.
- That is about 3% lower than the Rs 22,875 crore which was the estimated expenditure on the nutrient based subsidies in 2019-20. It will reduce the burden on the exchequer in this fiscal amid the COVID-19 outbreak.
- The government also approved the inclusion of a complex fertiliser namely **ammonium phosphate** (NP 14:28:0:0) under the NBS scheme.

Fertiliser subsidy in India

- In India, the fertiliser subsidy accounts for the **second largest subsidy** after food.
- Currently, **Urea** is the only controlled fertilizer and the government fixes the maximum retail price (MRP). The difference between the production cost and the MRP is reimbursed to manufacturers.
- Retail prices of non-urea fertilisers such as Di-ammonium Phosphate (DAP), Muriate of Potash (MoP) and NPK are **decontrolled** and are **determined by manufacturers**, while the Centre gives a fixed subsidy each year.

5. FDI rules tightened

FDI Routes in India

- The entry of Foreign Direct Investment (FDI) by non residents into India is regulated through two routes – **automatic route and government route**.
 - Under the Automatic Route, the foreign investor does not require any approval from the

Reserve Bank or Government of India for the investment.

- Under the approval route or government route, the foreign investor should obtain prior approval of the Government of India agencies or bodies specified.
- India has opened up most of the sectors for FDI investments through automatic route, but has kept certain sectors like defence, space and atomic energy restricted or prohibited.

Why in News?

- India recently revised its FDI policy with the objective of preventing “opportunistic takeovers” of firms hit by the lockdown induced by the COVID-19 outbreak.

What was the amendment?

- The government has announced that an entity of a country that **shares a land border** with India can now invest in Indian firms **only under the Government route**.
- Previously, only investments from Pakistan and Bangladesh faced such restrictions.
- The new changes also apply to **“beneficial” owners** — even if the investing company is not located in a neighboring country, it would still be subject to these conditions if its owner is a citizen or resident of such a country.
- India shares land borders with **Pakistan, Afghanistan, China, Nepal, Bhutan, Bangladesh and Myanmar**.

Rationale of the changes

- While the recent changes did not name any country, analysts see the amendments as aimed at possible Chinese investments.
- With many Indian businesses coming to a halt due to the lockdown imposed to contain the COVID-19 pandemic and

valuations plummeting, a number of domestic firms may be vulnerable to opportunistic takeovers or acquisitions from foreign players.

- China’s FDI has grown five-fold since 2014 and, as of December 2019, its cumulative investment in India exceeded \$8 billion — far more than investments by other countries that share borders with India.
- The fear is partly due to the concerns arising from other countries where Chinese investments in the time of COVID-19 are seen as an attempt to take over national assets at a time of crisis.

What was China’s response?

- China alleged that the additional barriers set by Indian side for investors from specific countries violate WTO’s **principle of non-discrimination**, and go against the general trend of liberalization and facilitation of trade and investment.
- India has denied China's criticism saying that the new rules are not denial of permission but only a change in the approval route for investments.

WTO Non-discrimination rules

- Non-discrimination is a key concept in WTO law. The principle of non-discrimination rests on two pillars:
 - the most-favored nation (MFN) treatment obligation and
 - the national treatment obligation.
- A **most-favored-nation** clause requires a country to provide any concessions, privileges, or immunities granted to one nation in a trade agreement to all other WTO member countries. Although its name implies favoritism toward another nation, it denotes the equal treatment of all countries.
- **National treatment** clause prohibits discrimination between imported and domestically produced goods with

respect to internal taxation or other government regulation.

- For example, if Country A provides special tax breaks for its pharmaceutical industry, all pharmaceutical companies that have operations in Country A will be entitled to the tax breaks, regardless of whether the company is domestic or foreign.

6. Operation Twist

What is it?

- Operation Twist is an initiative of the RBI that aims to **control long-term bond yields and bring down interest rates on long-term borrowing**.
- It is a monetary policy intervention by the central bank, conducted through **Open Market Operations (OMOs)**, where the central bank is **buying long term government securities and at the same time selling short term government securities**.
- Buying long term securities and selling short term securities will reduce the yield of long term securities. This yield impact is the objective of Operation Twist.
- *Yield is the return an investor gets on his bond.*

Rationale behind Operation Twist

- Whenever there is a long-term investment deficit in the country and the investors are hesitant to make long-term investments in the economy, the government or the central bank jumps in to revive growth by lowering the interest rate for long-term investment ventures.
- As the central bank buys long-term securities (bonds), their demand rises which in turn pushes up their prices.
- However, the bond yield comes down with an increase in prices, because there

is an **inverse relationship between the bond prices and their yields**.

How will it affect the economy?

- The interest rate in an economy is determined by yield. Thus, lower longer-term yields reduces long-term interest rates, which means people can avail long-term loans (such as buying houses, cars or financing projects) at lower rates.
- This also results in a dip in the expected returns from long-term savings which tilts the balance from saving towards spending.
- Hence, cheaper retail loans can help **encourage consumption spending** which is the largest GDP component in the economy.

Why in News?

- The RBI has announced to restart Operation Twist to soften long-term yields.
- The central bank will purchase long-dated securities with tenor between 6-10 years aggregating Rs 10,000 crore, while it will sell short-dated securities maturing June 2020, October 2020 and April 2021.
- Operation Twist was used by the RBI in December last year for the first time.

What are Open Market Operations (OMOs)?

- Open Market Operations are conducted by the RBI which involves sale or purchase of **G-Secs** to or from the market. The objective is to control the **money supply conditions**.
- If there is excess money supply (i.e. excess liquidity) in the market, the RBI resorts to sale of securities which reduces the volume of money. Similarly, when the liquidity conditions are tight, it buys securities from the market, thereby releasing money into the market.

What are Government Securities (G-Secs)?

- G-Secs are tradable instruments like bonds issued by the Central Government or the State Governments with a promise of repayment upon maturity.
- The Central Government can issue both treasury bills and bonds while the State Governments can issue **only bonds**, which are called the State Development Loans (SDLs).
- These securities are considered low-risk, since they involve the government and hence, are called **risk-free gilt-edged instruments**.

7. SIDBI's SAFE PLUS

About SIDBI

- Small Industries Development Bank of India (SIDBI) set up in 1990 under an Act of Indian Parliament.
- SIDBI acts as the **principal financial institution** for promotion, financing and development of the **Micro, Small and Medium Enterprise (MSME) sector** as well as for coordination of functions of institutions engaged in similar activities.
- The functions of SIDBI include financing small scale industrial units, providing seed capital to startups, providing technical assistance, promoting cleaner production and energy efficiency.
- The Shares of SIDBI are held by the Government of India and twenty- nine other institutions / public sector banks / insurance companies owned or controlled by the Central Government.
- SIDBI also maintains the **UdyamiMitra portal** with the objective to help the MSMEs with easy and secure access to financial and non-financial services. This is a one of a kind portal where MSME loan seekers can connect virtually to Lenders and Handholding agencies.

Why in News?

- SIDBI has announced a new loan scheme known as SIDBI Assistance to Facilitate Emergency response against Coronavirus (**SAFE PLUS**).
- It will offer emergency working capital of up to one crore rupees to MSMEs against their confirmed government orders. It will be **collateral free** and disbursed within 48 hours.

8. Ways and Means Advances

About WMA

- The RBI gives **temporary loans to the centre and state governments** as a banker to the government. This facility is called Ways and Means Advances (WMA). This facility was introduced in 1997.
- Thus, WMA is a temporary liquidity arrangement that helps **meet mismatches in receipts and payments of the government**.
- Under this scheme, Centre and states can avail themselves of immediate cash from the RBI. But it has to return the amount within **90 days**. Interest is charged at the existing **repo rate**.
- The limits for WMA are decided by the government and RBI mutually and revised periodically.

Why in News?

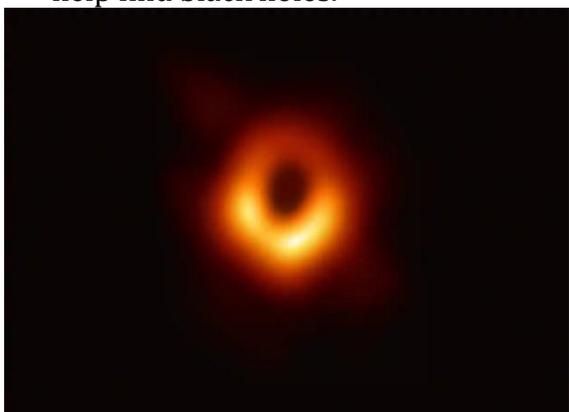
- The RBI has raised the Ways and Means Advances limit for the first half of the FY 2020-21 (April 2020 to September 2020) to Rs 1.20-lakh crore from Rs 75,000 crore in the year-ago period.
- This hike will help the central government to step up expenditure in the social sector, including health and sanitation, following the outbreak of the Covid-19 pandemic.

SCIENCE AND TECHNOLOGY

1. First merger of two black holes with unequal masses

What is a Black Hole?

- A black hole is a place in space where gravity pulls so much that **even light cannot get out**.
- The gravity is so strong because matter has been squeezed into a tiny space.
- This can happen when a star is dying.
- Because no light can get out, they are **normally invisible**.
- Space telescopes with special tools can help find black holes.



- Astronomers captured the first image of a black hole in April, 2019, with the help of the **Event Horizon telescope (EHT)**.

What is LIGO?

- LIGO (**Laser Interferometer Gravitational-wave Observatory**) is the world's **largest gravitational wave observatory**.
- LIGO detectors use laser interferometry to **measure the distortions in space-time** occurring between stationary, hanging masses (mirrors) caused by passing gravitational waves.
- The project operates three gravitational-wave (GW) detectors in the USA.
- They were joined by the European **Virgo (Italy)** detector in 2017.
- The **Japanese** detector, **KAGRA**, or Kamioka Gravitational-wave Detector, is

expected to join the international network soon.

LIGO-India

- In collaboration with LIGO, a gravitational wave detector is being set up in India.
- The LIGO India project is expected to join the international network in a first science run in **2025**.
- LIGO India will come up in **Maharashtra**, near Aundha in **Hingoli** district.
- The proposed LIGO-India project aims to move one **Advanced LIGO** detector from the USA to India.

Why in News?

- For the first time since it started functioning, the gravitational wave observatories at LIGO scientific collaboration have detected a merger of two unequal-mass black holes.

More in the News

- The event, dubbed **GW190412**, was detected nearly a year ago, almost five years after the first ever detection of gravitational wave signals by these powerful detectors.
- Subsequent analysis of the signal coming from the violent merger showed that it involved two black holes of unequal masses coalescing, one of which was some 30 times the mass of the Sun and the other which had a mass nearly 8 times the solar mass.

Significance

- The asymmetry in masses has important ramifications: It makes it possible to infer many more things such as
 - a more accurate determination of the distance from the event,
 - the spin or angular momentum of the more massive black hole and
 - the orientation of the whole event with respect to viewers on Earth.

2. Indian Initiative on Earth BioGenome Sequencing

About IIEBS

- Under the Indian Initiative on Earth BioGenome Sequencing (IIEBS), the **whole genome sequencing** of 1,000 species of plants and animals will be taken up.
- The **National Institute of Plant Genome Research**, New Delhi, is the coordinating centre for the nationwide project involving a total of 24 institutes.
- The project was **part of the Earth BioGenome Project**, an international initiative to catalogue life on the planet.

Why in News?

- The **Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI)** has been selected as one of the Biological Knowledge and Resource Centres of the Indian Initiative on Earth BioGenome Sequencing.

About EBP

- The Earth BioGenome project is a global effort to sequence and catalog the genomes of all known **eukaryotic species**, currently estimated to be ~1.5 million over a period of ten years.
- The project officially launched in 2018.

Benefits

- Sequencing all known eukaryotic genomes will revolutionize the understanding of biology and evolution, bolster efforts to conserve, help protect and restore biodiversity, and in return create new benefits for society and human welfare.
- India's participation in the EBP would provide a **boost for the field of genomics and bioinformatics** within the country.
- The project will enable collection and **preservation of endangered and economically important species**.

- The decoded genetic information will also be a useful tool **to prevent biopiracy**.

What are eukaryotic species?

- A eukaryote is an organism with a complex cell or cells, in which the genetic material is organized into a membrane-bound nucleus or nuclei.
- Eukaryotes comprise animals, plants, and fungi—which are mostly multicellular - as well as various other groups that are collectively classified as protists (many of which are unicellular).
- In contrast, prokaryotes are organisms, such as bacteria and archaea, that lack nuclei and other complex cell structures.

Genome Sequencing

- A genome is an organism's complete set of DNA, including all of its genes. Each genome contains all of the information needed to build and maintain that organism.
- In humans, a copy of the entire genome—more than 3 billion DNA base pairs—is contained in all cells that have a nucleus.
- Whole-genome sequencing is the analysis of the entire genomic DNA sequence of a cell at a single time, providing the most comprehensive characterization of the genome.

3. Ransomware attacks

What is Ransomware?

- Ransomware is a type of malicious software, or **malware**, designed **to deny access** to a computer system or data **until a ransom is paid**.
- Ransomware typically spreads through **phishing emails** or by unknowingly visiting an infected website.
- *Phishing is a method of trying to gather personal information using deceptive e-mails and websites.*

- Anyone with important data stored on their computer or network is at risk, including government or law enforcement agencies and healthcare systems or other critical infrastructure entities.
- Recovery can be a difficult process that may require the services of a reputable data recovery specialist, and some victims pay to recover their files. However, there is no guarantee that individuals will recover their files if they pay the ransom.
- Examples: Reveton (2012), CryptoLocker (2013), Locky (2016), **WannaCry** and **Petya (2017)**, **Sodinokibi (2019)**.

Types of ransomware

- Ransomware attacks can be deployed in different forms. Some variants may be more harmful than others, but they all have one thing in common: a ransom.
- **Crypto malware** - encrypts files, folders, and hard-drives. Example- 2017 **WannaCry**. Victims were asked to pay ransom in Bitcoin to retrieve their data.
- **Lockers** - completely lock you out of your computer or devices, making it impossible to access any of your files or applications. This type of ransomware is most often Android-based.
- **Scareware** - fake software that acts like an antivirus or a cleaning tool. Scareware often claims to have found issues on your computer, demanding money to resolve the problems.
- **Doxware** - Commonly referred to as **leakware or extortionware**, doxware threatens to publish your stolen information online if you don't pay the ransom.
- **RaaS** ("Ransomware as a service") - RaaS is a type of malware hosted anonymously by a hacker. These

cybercriminals handle everything from distributing the ransomware and collecting payments to managing decryptors — software that restores data access — in exchange for their cut of the ransom.

- **Ransomware on mobile devices** - Mobile ransomware often is delivered via a malicious app, which leaves a message on your device that says it has been locked due to illegal activity.

Why in News?

- In an alert sent to 194 nations, including India, Interpol said organisations at the forefront of the global response to the COVID-19 outbreak had also become targets of ransomware attacks.
- The agency's Cybercrime Threat Response Team had detected an increase in the number of attempted ransomware attacks against key organisations and infrastructure engaged in the virus response.

About Interpol

- International Criminal Police Organization (Interpol) is a network comprising 194 member nations.
- The agency, with its headquarters in Lyon, France, was established in 1923.

Functions of Interpol

- Interpol's role is to enable police around the world to work together to make the world a safer place.
- The Interpol facilitates information exchange, knowledge sharing and research between nations. This is done by **issuing colour-coded 'notices' in four languages - English, Spanish, French, and Arabic.**
- The Interpol **doesn't have law enforcement powers** such as arrest.

- When a member nation approaches it with a specific request backed with court orders, the Interpol sends it out to other countries. The information received is sent back to the country.

India and Interpol

- India has been a member of Interpol since 1956.
- The **Central Bureau of Investigation** represents the Interpol in India as the country's National Central Bureau (NCB). The NCB serves as the national platform for cooperation between domestic law enforcement units and the international police community and it is the designated contact point for the Interpol.

Related information

CERT-In

- The Indian Computer Emergency Response Team (CERT-In) was formed in 2004 with an aim to secure Indian cyber space.
- It is under the **Ministry of Electronics and Information Technology**.
- CERT-In has been designated under Section 70B of Information Technology (Amendment) Act 2008 to serve as the **national agency to perform the following functions in the area of cyber security:**
 - Collection, analysis and dissemination of information on cyber incidents
 - Forecast and alerts of cyber security incidents
 - Emergency measures for handling cyber security incidents
 - Coordination of cyber incident response activities
 - Issue guidelines, advisories, vulnerability notes and whitepapers relating to information security practices, procedures, prevention, response

and reporting of cyber incidents.

- Such other functions relating to cyber security as may be prescribed.

4. Geo-fencing

About Geo-fencing

- Geo-fencing is a location-based service where an app uses global positioning system (GPS) or radio frequency identification (RFID), Wi-Fi or cellular data to trigger a pre-programmed action when a mobile device **enters or exits a virtual boundary** set up around a geographical location, known as a geo-fence.

Applications

- **Tracking:** Geo-fencing can alert a dispatcher when a truck driver breaks from his route.
- **Marketing:** A business can text an opt-in customer a coupon code when the customer's smartphone enters a defined geographical area.
- **Security:** An ankle bracelet can alert authorities if an individual under house arrest leaves the premises.
- **Monitoring:** Wildlife, pets, children, convicts, vehicles, etc.

Why in News?

- The Department of Telecommunications (DoT) has shared a standard operating procedure (SOP) with all telecom service providers regarding an application called **COVID-19 Quarantine Alert System (CQAS)**.
- CQAS can track suspected or quarantined persons, set up geo-fencing around them and alert concerned authorities if the geo-fencing is violated, thus augmenting government's efforts for surveillance of COVID suspects.
- **The DoT and Centre for Development of Telematics (C-DOT)**, in coordination

with telecom service providers, have developed and tested the application.

Legal provisions

- The States have been asked to seek the approval of their Home Secretaries under the provisions of **Section 5(2) of the Indian Telegraph Act, 1885**, for the specified mobile phone numbers to request the DoT to provide information by email or SMS in case of violation of “geo-fencing”.
- The particular provision under the Act, authorises State or Centre to **access information of a user’s phone data** in case of “occurrence of any public emergency or in the interest of the public safety.”
- As per the SOP, the phone number should be deleted from the system after the period for which location monitoring is required is over and the data would be deleted four weeks from thereon.
- The data collected shall be used only for the purpose of Health Management in the context of COVID-19 and is strictly not for any other purposes. Any violation in this regard would attract penal provisions under the relevant laws.

About C-DOT

- The Centre for Development of Telematics is an **autonomous Telecom R&D centre of the Department of Telecommunications**.
- It is a registered society under the Societies Registration Act, 1860.
- It was established in 1984 with the initial mandate of designing and developing digital exchanges. C-DOT has significantly contributed to the Indian Telecom Network’s Digitization.
- C-DOT has expanded to develop intelligent computer software applications.

5. BCG vaccine

About BCG vaccine

- The **Bacille Calmette-Guérin (BCG)** vaccine has existed for 80 years and is one of the most widely used of all current vaccines.
- It is the **live weakened form of mycobacterium bovis** -- the causative agent of tuberculosis in cattle -- related to **mycobacterium tuberculosis (Mtb)**, the bacteria which causes tuberculosis in humans.
- BCG vaccine has a documented protective effect against **meningitis and disseminated TB in children**.
- It does not prevent primary infection and, more importantly, does not prevent reactivation of latent pulmonary infection, the principal source of bacillary spread in the community.
- The impact of BCG vaccination on transmission of Mtb is therefore limited.

Meningitis

- Meningitis is an **inflammation** of the **meninges**.
- The meninges are the three membranes that cover the **brain and spinal cord**.
- Meningitis can occur when fluid surrounding the meninges becomes infected.

Disseminated tuberculosis

- Disseminated tuberculosis occurs when **TB bacilli spread throughout the body** via the bloodstream as the immune system cannot contain them in the lung.
- This leads to tuberculosis in a number of organs other than the lungs, such as the meninges, abdominal lymph nodes, liver, spleen, bones and joints.

BCG in India

- The BCG vaccine is **part of India's universal immunisation programme** and administered to millions of children at birth or soon after it.

- India, with the world's highest TB burden, introduced BCG mass immunisation in 1948.

Why in News?

- WHO highlighted a few critical issues over the use of the BCG vaccine for COVID-19.
- It underscored the importance of **randomised controlled trials** of the vaccine to understand its safety and efficacy before using it on healthcare workers.

What is a randomized controlled trial?

- They are the most reliable method available for **testing new treatments**.
- The scientific design of a randomized controlled trial is as follows:
 - **Randomized:** The researchers decide randomly as to which participants in the trial receive the new treatment and which receive a placebo, or fake treatment.
 - **Controlled:** The trial uses a control group for comparison or reference. In the control group, the participants do not receive the new treatment but instead receive a placebo or reference treatment.

6. No assured immunity from second COVID-19 infection

Immune response

- The immune system protects the body from possibly harmful substances by **recognizing and responding to antigens**.
- Antigens are substances (usually proteins) on the surface of cells, viruses, fungi, or bacteria. Non-Living substances such as toxins, chemicals, drugs, and

foreign particles (such as a splinter) can also be antigens.

- The immune system recognizes and destroys, or tries to destroy, substances that contain antigens.

Innate Immunity

- Innate, or nonspecific, immunity is the defense system that is **present at birth**.
- Innate immunity involves barriers that keep harmful materials from entering your body.
- Innate immunity also comes in a protein chemical form, called innate humoral immunity. Examples: **interferon** and **interleukin-1** (which causes fever).
- If an antigen gets past these barriers, it is attacked and destroyed by other parts of the immune system.
- Examples of innate immunity include: Cough reflex, Enzymes in tears and skin oils, Mucus, Skin and Stomach acid.

Acquired immunity

- Acquired immunity is immunity that **develops with exposure** to various antigens during the lifetime.
- The immune system builds a defense against that **specific antigen**.
- Immunity may be acquired by **infection or vaccination** (active immunity) or by the **transfer of antibody or lymphocytes** from an immune donor (passive immunity).
- **Active immunity** is due to the production of **antibodies by the organism itself** after the body's defence mechanisms are stimulated by antigens.
- **Passive immunity** results from the acquisition of **antibodies from another organism** in which active immunity has been stimulated.

Why in News?

- The World Health Organization has warned that people who have had Covid-19 are not necessarily immune by the

presence of antibodies from getting the virus again.

- There is no evidence yet that people who have had Covid-19 will not get a second infection.

7. SunRISE Mission

What's in the news?

- NASA has selected a new mission called the Sun Radio Interferometer Space Experiment (SunRISE) to study **how the Sun generates and releases giant space weather storms – known as solar particle storms – into planetary space.**
- The SunRISE is an **array of six CubeSats** operating as one very large radio telescope which will be built and launched by 2023.
- The six small spacecraft will be stationed around 10 km apart into the **geosynchronous Earth orbit** and work together to capture radio images of low-frequency emissions from solar activity.

Significance

- These images will help create 3D maps of solar particle bursts to pinpoint where giant particle bursts originate on the Sun and how they evolve as they expand outward into space.
- NASA believes that the information will also help determine what initiates and accelerates these giant jets of radiation.
- The mission will help improve our understanding of how our solar system works and also it ultimately can help protect astronauts travelling to the Moon and Mars by providing better information on how the Sun's radiation affects the space environment they must travel through.

Related information

CubeSats

- CubeSats are a class of research spacecraft called nanosatellites.

CubeSats are built to standard dimensions (Units or “U”) of 10 cm x 10 cm x 10 cm.

- They can be 1U, 2U, 3U, or 6U in size, and typically weigh less than 1.33 kg per U.

8. SARS-CoV-2 virus

About Coronaviruses

- Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as **Middle East Respiratory Syndrome (MERS)** and **Severe Acute Respiratory Syndrome (SARS).**
- The virus is named after its shape which takes the form of a crown with protrusions around it and hence is known as coronavirus

About SARS

- SARS (**Severe Acute Respiratory Syndrome**) coronavirus (**SARS-CoV**) – virus identified in **2003.**
- SARS-CoV is thought to be an animal virus from an as-yet-uncertain animal reservoir, perhaps bats, that spread to other animals (civet cats) and first infected humans in the Guangdong province of southern China in 2002.
- Transmission of SARS-CoV is **primarily from person to person.**
- Symptoms are **influenza-like** and include fever, malaise, myalgia, headache, diarrhoea, and shivering (rigors).
- **No vaccines or Prophylaxis** (prevention of disease) treatment available.
- WHO estimates that the case **fatality ratio** of SARS ranges from **0% to 50%** depending on the age group affected, with an **overall estimate of case fatality of 14% to 15%.**

About MERS

- **Middle East respiratory syndrome (MERS)** is a **viral respiratory disease caused by a novel coronavirus** (Middle East respiratory syndrome coronavirus, or MERS-CoV) that was first identified in Saudi Arabia in 2012.
- Typical MERS symptoms include fever, cough and shortness of breath. Pneumonia is common, but not always present.
- Approximately **35%** of reported patients with MERS-CoV infection have died.
- MERS-CoV is a **zoonotic** virus, which means it is a virus that is transmitted between animals and people.
- Studies have shown that humans are infected through direct or indirect contact with infected **dromedary camels**.
- **No vaccine or specific treatment** is currently available, however several MERS-CoV specific vaccines and treatments are in development.

About novel coronavirus:

- A **novel coronavirus (nCoV)** is a new strain that has not been previously identified in humans.
- COVID-19 is a term coined by the WHO to denote the disease that has led to a pandemic.
- The International Committee on Taxonomy of Viruses (ICTV) announced “**severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)**” as the name of the new virus.

Structure of SARS COV-2:

- Like other coronaviruses, SARS-CoV-2 virus particles are **spherical** and have mushroom-shaped proteins called **spikes** protruding from their surface, giving the particles a crown-like appearance.
- The **spike binds and fuses to human cells**, allowing the virus to gain entry.

- Like SARS coronavirus, the spike protein of the SARS-CoV-2 that causes Coronavirus Disease 19 (COVID-19) binds to the **cellular receptor** called **angiotensin-converting enzyme 2 (ACE2)**, which serves as the **entry point into human cells**.
- But unlike in the case of SARS, the spike protein of the novel coronavirus binds to the cell receptor with much higher affinity — 10- to 20-fold higher.
- The much greater binding affinity to the cell receptor explains the apparent **high human-to-human transmissibility** of the virus compared with the SARS coronavirus.

How does it spread?

- Coronaviruses are **zoonotic**, meaning they are transmitted between animals and people.
- Detailed investigations found that **SARS-CoV** was transmitted **from civet cats to humans** and **MERS-CoV** from **dromedary camels to humans**.
- The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneeze.

Who is affected?

- While people of all ages can be affected by the disease, people aged 80 and above are at the highest risk of dying due to COVID-19.
- Victims of the virus with pre-existing medical conditions such as cardiovascular disease and diabetes have a higher fatality rate than others.

What is the treatment?

- There is no current evidence from randomised controlled trials to recommend any specific treatment for suspected or confirmed COVID19 patients.

- **No specific antivirals** are recommended for treatment of those suffering from respiratory ailment due to lack of adequate evidence from medical literature.
- In India, the Union Health Ministry guidelines have recommended use of **anti-HIV drug combinations Lopinavir and Ritonavir** on a case-to-case basis depending upon the severity of the condition.
- Application of timely, effective, and safe **supportive therapies** is the cornerstone of therapy for patients that develop severe manifestations of COVID-19.

Symptoms of infection

- Common signs of infection include respiratory symptoms, fever, cough, shortness of breath and breathing difficulties.
- In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death.

COVID related terminologies:

Pandemic

- A pandemic is defined as **an epidemic occurring worldwide**, or over a very wide area, crossing international boundaries and usually affecting a large number of people.
- On January 30, WHO announced that COVID-19 was a **Public Health Emergency of International Concern**.
- On March 11, WHO decided to announce COVID-19 as a pandemic.
- COVID-19 is the first pandemic caused by a coronavirus.

Epidemic

- An epidemic, as explained by the WHO, is the **regional outbreak of an illness** that spreads unexpectedly. It refers to an increase, often sudden, in the number of cases of a disease beyond what is

normally expected in the population of an area.

- Examples of epidemics in India in the past include the outbreaks of **zika virus, chikungunya and dengue fever**.

Endemic

- The term endemic refers to the **constant presence and/or usual prevalence of a disease** or infectious agent in a population within a geographic area. For example, **chickenpox is considered endemic in the UK, but malaria is not**.

R0

- R-Naught (R_0) is the **basic reproduction number**.
- This is the **number of new infections caused by one infected individual** in an entirely susceptible population.
- It helps determine whether an epidemic can occur, the rate of growth of the epidemic, the size of the epidemic and the level of effort needed to control the infection.
- If R_0 is 2, then one individual will infect two others.
- As of end May, India's R_0 value was in the range of 1.22.

Community transmission

- According to the WHO, community transmission "is evidenced by the inability to relate confirmed cases through chains of transmission for a large number of cases, or by increasing positive tests through sentinel samples (routine systematic testing of respiratory samples from established laboratories)".
- In other words, community transmission or spread is said to be taking place **when the source of the contagion is not known**, i.e. when one is unable to trace an infection back to a carrier who has travelled in an affected area, or through contact with a person who has the disease.

- A state of community spread implies that the virus is now circulating in the community, and can infect people with no history — either of travel to or contact with affected people and areas. At this stage, it is theoretically possible for everyone to catch the infection.

Cytokine storm

- An **immune reaction** triggered by the body to fight an infection is known as a cytokine storm when it **turns severe**.
- The body releases too many **cytokines**, proteins that are involved in immunomodulation, into the blood too quickly. While normally they regulate immune responses, in this case they cause harm and can even cause death.
- These cytokines dilate blood vessels, increase the temperature and heartbeat, besides throwing blood clots in the system, and suppressing oxygen utilisation.
- If the cytokine flow is high and continues without cessation, the body's own immune response will lead to **hypoxia** i.e. insufficient oxygen to the body, multi-organ failure and death.

Herd immunity

- Herd immunity is the **indirect protection** from a contagious infectious disease that happens when a population is immune either through **vaccination or immunity developed through previous infection**.

9. Tackling COVID-19

Why in News?

- Guidelines by the **World Health Organization** specify that one of the ways to reduce the risk of COVID-19 infection is by regularly and thoroughly cleaning one's hands with an **alcohol-based hand rub** or washing them with **soap and water**.

- Regular washing becomes important as the **virus tends to be viable from hours to more than a day** on different surfaces that are regularly touched with hands.

Water alone is insufficient

- The grime on our hands contains innumerable viruses and bacteria.
- Washing with water without using soap **helps reduce the amount of microbes** but **does not remove completely** the virus and bacteria.
- Using soap, therefore, becomes far more effective in removing microbes.

How does washing with soap help get rid of the coronavirus?

- Viruses such as coronavirus, influenza-causing viruses, Ebola, Zika have their genetic material **encased in a layer of fat** called the **lipid envelop**.
- Soap molecules are pin-shaped with a head that is water-loving (hydrophilic) and a tail that is oil-loving (oleophilic).
- Being oleophilic, the tail portion of the molecule tends to have an affinity for and competes with the lipids in the virus envelope.
- Since the chemical bonds holding the virus together are not very strong, the long oleophilic tail gets inserted into the envelope and tends to have a 'crowbar' effect that breaks the lipid envelope of the virus.
- The tail also competes with the bond that binds the RNA and the lipid envelop thus dissolving the virus into its components which are then removed by water.

Do all viruses have the lipid layer?

- No, certain viruses do not have the lipid envelop and are called the **non-enveloped viruses**.
- Examples: Rotavirus which causes severe diarrhoea, poliovirus, adenovirus

that cause pneumonia and human papillomavirus (HPV).

- The oil-loving tail of the soap molecule also disrupts the bond that binds dirt and non-enveloped viruses to the hand.
- The dirt and viruses are surrounded by several tails making them remain as suspended particles.
- Rinsing with water washes away the suspended particles leading to clean hands.

How does alcohol-based hand sanitizer help get rid of coronavirus?

- Like soap, the alcohol present in hand sanitizers dissolve the lipid envelop, thus inactivating the virus.
- To be effective, the sanitizers should contain **at least 60% alcohol**.
- Unlike water, alcohol run does not remove the dead viruses from the hand.
- While a sanitizer can quickly reduce the number of microbes, it does not get rid of all types of germs, and is not as effective when hands are visibly dirty or greasy.

10. Reverse vaccinology

What is reverse vaccinology?

- Reverse vaccinology is described as **examination of the genome of an organism in order to identify novel antigens and epitopes** that might constitute vaccine candidates.
- Antigen is a harmful substance which enters the body which causes the body to make antibodies as a response to fight off disease.
- An epitope (also known as the antigenic determinant) is that part of the antigen to which antibodies bind. While the antigen evokes the antibody response in the host, the antibody doesn't bind to the entire protein, but only to that segment called the epitope.

- The **use of bioinformatics for the preparation of vaccines without having to culture the microorganisms** in the laboratory is reverse vaccinology.

Why reverse vaccinology?

- Viral culture in the laboratory to develop a vaccine was **time-consuming** since it takes time to find out the protein in the virus.

Is this new?

- The 'reverse vaccinology' technique has been available for the last **10 to 15 years**.
- Using 'reverse vaccinology', vaccinations were developed for **meningococcal and staphylococcal infections** all through the world.

Why in News?

- Dr. MGR Medical University in Tamil Nadu has developed a vaccine candidate against SARS-CoV-2 through reverse vaccinology.

11. Convalescent plasma trail

What is convalescent plasma?

- People **who have recovered** from COVID-19 have **antibodies** to the disease in their blood. Doctors call this convalescent plasma.
- Researchers hope that convalescent plasma can be given to people with severe COVID-19 to boost their ability to fight the virus.
- Everyone who has suffered from a disease possibly carries what are called **neutralising antibodies** that when extracted via plasma and transfused on to others with the infection can **help their immune system** fight it off.

What are antibodies?

- Antibody, also called **immunoglobulin**, is a **protective protein** produced by the immune system in response to the presence of a foreign substance, called an **antigen**.

- Antibodies recognize and latch onto antigens in order to remove them from the body.
- A wide range of substances are regarded by the body as antigens, including disease-causing organisms and toxic materials such as insect venom.

What are the challenges?

- For all these studies to get off the ground, researchers would need enough donors who have recovered fully and can be tested for other pathogens as well.
- People should be willing to donate plasma, and good tests should emerge to estimate how many antibodies they have.
- While studies are required to show the timing and dosage, there is broad consensus that **early administration** will be ideal.

Why is timing crucial?

- Early on in the disease, there is a lot of virus in the system and the antibodies will bind with the virus eliminating it.
- If this is not done at this stage, then the virus sets off a cascade of inflammation in the body.
- If the patient has reached that stage, the plasma may not be helpful.

Need for blood donation

- Since it rests on blood donation, people from the more common blood groups, for instance, O+ve, will have easier access to plasma.
- Naturally, the pool for rare blood groups is going to be smaller.
- However, experts have been laying emphasis on the need for people who have recovered to voluntarily come forward and donate plasma to help with research and other patients.

Why in News?

- The Indian Council of Medical Research has approved a multicentric phase-2

trial using convalescent plasma on COVID-19 patients with moderate illness.

Earlier trials

- This is **not the first time** that plasma from recovered patients has been used to treat people infected with certain viruses for which drugs are not available.
- When Ebola struck Guinea, Sierra Leone, and Liberia in 2014, the World Health Organization prioritised the evaluation of treatment with convalescent plasma derived from patients who have recovered from the disease.
- Treatment with convalescent plasma is a classical, time-tested method. It has been used against measles, chickenpox, and rabies.

12. Testing COVID-19

Important timelines and symptoms characteristic of COVID-19 infection:

- After exposure to SARS-CoV-2, the **incubation period is typically 5 to 6 days** but it can range from 2 to 14 days.
- In the first week, only viral RNA and antigen particles will be present.
- During the second to third weeks, the initial antibody response in the form of Immunoglobulin M (**IgM**) will be seen which may be present for another 2 weeks.
- Immunoglobulin G (**IgG**) antibody response will appear after 2 weeks in the blood and provides long term immunity.
- From the available literature, the COVID-19 infection will be asymptomatic/mild in 81%, severe in 14% and critical in 5% of cases as shown.
- But the infection can be transmitted from persons through droplets, even

from those with mild symptoms or asymptomatic carriers.

Two major types of tests

1) Antigen test

- The antigen test is the diagnostic test for COVID-19 in which the viral RNA is directly identified by **real time reverse transcriptase polymerase chain reaction (rRT-PCR)**.
- This is an extremely sensitive test to identify whether someone is currently infected and active.

2) Antibody test

- The antibody test is to identify the immune response to earlier infection.
- By identifying the type of antibody positivity (IgM or IgG or both or none) we can determine whether the individual had exposure to infection or not, still has active infection or has developed long-term immunity.

Best diagnostic test to identify an active COVID-19 infection:

- The rRT-PCR antigen test is generally considered as the best diagnostic test to identify if someone is currently infected and active with SARS-CoV-2.

About real-time PCR

- A real-time polymerase chain reaction (real-time PCR), also known as **quantitative polymerase chain reaction (qPCR)**, is a laboratory technique of molecular biology based on the polymerase chain reaction (PCR).
- It monitors the **amplification of a targeted DNA molecule** during the PCR (i.e., in real time), not at its end, as in conventional PCR.

How is it performed?

- In this, a nasopharyngeal (nasal) or oropharyngeal (mouth) **swab** is taken and sent in a cold storage box to the central laboratory, where the **viral RNA is converted to complementary DNA (cDNA)** using reverse transcriptase, and

amplified following the addition of a **primer and fluorescent dye** and DNA building enzymes.

- A positive test will be indicated by the **raise in fluorescence**.
- Depending on the equipment and method used, the time taken may vary between a few hours to a day to get the reports.

Positives and negatives

- This test is very **sensitive and specific** and can detect even if a single viral RNA particle is present in the swab.
- **False negative** (negative test when the patient is actually COVID-19 positive) may be obtained in some cases due to **improper swab sampling, prolonged time to get samples to the lab causing degradation of RNA**.

About Rapid antibody testing

- It involves conducting **blood tests** on people displaying influenza-like illness symptoms in containment zones, large migration gatherings, or evacuee centres.
- A rapid antibody test is conducted to determine the **presence of antibodies IgM and IgG**, which can be detected from the seventh day of the onset of COVID-19 symptoms.
- This test can help understand an individual's capacity to fight the infection after the virus has invaded the body.
- A rapid test kit can produce results in **just 30 minutes**.
- The rapid antibody-based test will help detect the growth rate of cases, effectively aiding the country develop a better containment strategy.

Not for diagnosis

- WHO **does not recommend the use of antibody-detecting rapid diagnostic tests for patient care** but encourages the continuation of work to establish

their usefulness in **disease surveillance and epidemiologic research.**

- The rapid antibody tests **may not be as accurate as the RT-PCR.**
- These tests are known to throw up **more false negatives** than false positives which is why the US Centre for Disease Control recommends a molecular test like RT-PCR if a rapid antibody test throws negative results.

Issues with currently available rapid testing kits

- Though it is **quick** and it can be **done by anyone without much training** the currently available POC rapid testing kits have been brought into the market **without quality assurance by the regulatory authorities** of the countries in which they were manufactured and they **lack the validation process.**
- Several of the testing kits have been fast-tracked due to increasing demand, hence lacking in quality, with **variable sensitivity from 30% to 80%.**
- The main concerns raised by several European countries and India are that these kits are showing a higher percentage of false negative reports.

13. COVID-19 vaccine

What are vaccines?

- Vaccines are one of the most effective tools to **prevent** diseases. A vaccine is a substance that **resembles the disease-causing agent** (also called pathogen) but does not cause the disease.
- It **trains the body's immune system** to recognise and kill the pathogen, and creates a memory for the future.
- Vaccines are available to protect us against many life-threatening diseases such as polio, influenza, meningitis, typhoid, tetanus, diphtheria, and certain types of cancers.

- Vaccines have also been responsible for eradication (or near eradication) of deadly diseases such as smallpox and polio.

How are these made?

- There are multiple ways to make vaccines.
- For a **killed vaccine**, the pathogen can be **grown outside the body, purified and inactivated** with chemicals. Example: injectable polio vaccine.
- Alternatively, the pathogen can be **weakened by repeated culture or by genetic means.** Example: oral polio vaccine.
- One of the proteins on the pathogen surface can also be **produced artificially** and used to raise immunity. An example of this would be the Hepatitis B vaccine.

Stages of vaccine development

- Development of vaccines can be simplified into two broad stages:
- **Pre-clinical development** is research carried out in lab assays and on animals. It includes:
 - Identification (discovery) of relevant antigens (e.g. screening)
 - Evaluation of vaccine efficacy in test tubes and animals
 - Manufacture of the vaccine to Good Manufacturing Practice standards
- **Clinical development** is when the vaccine is first tested in humans.
 - It covers four stages over several years, from initial clinical trials in humans (phase I) right through to introduction and beyond (phase IV).
 - Clinical development is built on rigorous ethical principles of informed consent from

volunteers, with an emphasis on vaccine safety as well as efficacy.

Why in News?

- A vaccine for COVID-19, called **mRNA (or messenger ribonucleic acid)-1273** is being tested in the U.S.

What is the mRNA vaccine?

- The genetic blueprint (or code) in living organisms is stored in a double-stranded molecule called **DNA (deoxyribonucleic acid)**, which makes proteins that are responsible for nearly every function in the human body.
- The conversion of DNA code into proteins requires a single-stranded molecule called the **mRNA (messenger ribonucleic acid)**.
- The **mRNA-1273** is a piece of RNA that carries the **code to make the COVID-19 virus Spike protein** when introduced into cells.
- This protein present on the virus surface is critical for its entry into cells.
- **Immunity (antibodies) to the Spike protein can block virus entry** and its multiplication, and thus ameliorate the disease.
- The COVID-19 vaccine has been fast-tracked into humans without prior testing in animals.
- Still, it may take one to two years for the clinical trials to be over.
- Since there is no guarantee that the mRNA-1273 (or another) vaccine would work, a rich pipeline of over 40 candidates is important.

Is a virus needed to develop a vaccine against it?

- With modern molecular tools and technologies, **isolating a virus is not required** to make a vaccine against it.
- The **genetic sequence** can be obtained directly from infected patients and this can be converted into proteins using various platform technologies.

- This makes it possible to have vaccines ready for hundreds of pathogens that have not yet infected humans, but have the potential to do so in future.

14. Solidarity trial

About Solidarity Trial

- The Solidarity Trial of **WHO** will test four different drugs or combinations — (i) **remdesivir**, (ii) a **combination of two drugs, lopinavir and ritonavir**, (iii) the two drugs **plus interferon beta**, and (iv) **chloroquine**.
- The Solidarity Trial will compare four treatment options to assess their relative effectiveness against COVID-19.

About the drugs

Remdesivir

- Remdesivir is an investigational drug with broad-spectrum antiviral activity.
- However it is **not yet approved anywhere** globally for any use.
- Remdesivir has demonstrated **in vitro and in vivo activity** in animal models against the viral pathogens **MERS and SARS**, which are also coronaviruses and are structurally similar to COVID-19.
- The limited preclinical data indicate that remdesivir may have potential activity against COVID-19.

Lopinavir and Ritonavir

- The combination of lopinavir and ritonavir is used with other medications **to treat HIV infection**.
- Lopinavir and ritonavir are in a class of medications called **protease inhibitors** (*A substance that inhibits the action of a protease (an HIV enzyme) specifically so that cleavage of viral proteins into mature infectious particles is prevented*).
- They work by **decreasing the amount of HIV** in the blood.
- Although lopinavir and ritonavir **will not cure HIV**, these medications **may decrease the chance of developing**

AIDS and HIV-related illnesses such as serious infections or cancer.

- Recently Russian doctors have found lopinavir/ritonavir (**LPV/r**) medication effective for the treatment of mild coronavirus cases.

Interferon beta (along with LPV/r)

- The body produces **naturally** anti-inflammatory interferon beta to ward off viruses.
- The drug combination (two HIV drugs- lopinavir and ritonavir plus Interferon beta) was used in patients during the SARS and MERS outbreaks, and it appeared to help.

Chloroquine

- The drug has been around for decades as an **antimalarial** treatment.
- Studies found that chloroquine and the related **hydroxychloroquine** can stop the novel coronavirus from infecting cells in the lab, and anecdotal evidence suggests that it may help patients with COVID-19.
- The ICMR recently recommended the use of hydroxychloroquine for the treatment of COVID-19 for 'high risk population' such as health workers and family members of infected patients.

Why in News?

- India is all set to join the World Health Organisation's "Solidarity trial" aimed at rapid global search for drugs to treat COVID-19.

15. Hydroxychloroquine

About Hydroxychloroquine

- Hydroxychloroquine (HCQ) is an **anti-malarial drug** similar to chloroquine, one of the oldest and best-known anti-malarial drugs.

Mechanism of action:

- Hydroxychloroquine is an **interferon blocker**, and works by **diminishing the immune system's response to a viral**

infection.

- *Interferons are a group of soluble glycoproteins that are produced and released from cells in response to virus infection.*
- This property of HCQ makes it useful in **autoimmune disorders such as lupus and rheumatoid arthritis.**

Hydroxychloroquine and COVID-19:

- A **hyperactive response by the immune system** is said to be primarily responsible for pneumonia, also a fallout of a severe SARS-CoV-2 infection.
- Since HCQ has the ability to diminish the immune system's response to a viral infection it seems to be effective in case of COVID-19 patients.
- The drug has shown to have shortened the time to clinical recovery of COVID-19 patients.
- However, many of these are in small lab-controlled testing and **no proper human trials** have been conducted to determine its efficacy.

Adverse effects of HCQ:

- HCQ may lead to
 - cardiac arrhythmia
 - liver damage

Why in News?

- The Indian Council for Medical Research (ICMR) has cleared HCQ to be used as a prophylaxis, or preventive medication, by doctors, nurses and other health staff.

India & HCQ

- India produces **70 per cent of the world's supply of Hydroxychloroquine** making it the biggest manufacturer.
- India gets the active pharmaceutical ingredient (API) that is used to manufacture HCQ from China and supplies so far have been steady.

ICMR

- The Indian Council of Medical Research located in New Delhi is the **apex body in India** for the formulation, coordination and promotion of biomedical research.
- The ICMR is **funded by the Government of India** through the Department of Health Research, Ministry of Health & Family Welfare.
- In 1911, the Government of India set up the Indian Research Fund Association (IRFA) with the specific objective of sponsoring and coordinating medical research in the country. After

independence, it was redesignated the Indian Council of Medical Research (ICMR) in 1949, with a considerably expanded scope of functions.

- The Governing Body of the Council is presided over by the **Union Health Minister**.

REPORTS & INDICES

1. Global Report on Internal Displacement 2020

Highlights of the report

- It is released by the **Internal Displacement Monitoring Centre (IDMC)**.
- According to the report, **conflict and violence** sparked 50.8 million internal displacement across the world at the end of 2019.
- At least 33.4 million new displacements took place across 140 countries and territories in 2019 alone. Out of the 33.4 million new displacements, 8.5 million were related to conflict and violence, while 24.9 million due to **disasters**. This is the highest figure recorded since 2012.
- Out of the 24.9 million displaced due to disasters, **23.9 were weather-related**, and much of this displacement took place in the form of pre-emptive evacuations.
- **Cyclones Fani and Bulbul** triggered more than five million in India and Bangladesh alone. Evacuations clearly save lives, but many evacuees had their displacement prolonged because their homes had been damaged or destroyed.
- The report noted that the majority of the displacement **due to conflicts occurred in low and middle-income countries** including Syria, the Democratic Republic of the Congo (DRC) and Ethiopia.

What's in the news?

- The Internal Displacement Monitoring Centre has released its 'Global Report on Internal Displacement 2020'.

About IDMC

- Based in Geneva, Switzerland, the Internal Displacement Monitoring Centre is the world's authoritative

source of data and analysis on internal displacement.

- It was established in 1998 as a part of the Norwegian Refugee Council (NRC), a non-governmental organisation.

2. World Press Freedom Index 2020

About the Index

- Published every year since 2002 by **Reporters Without Borders**, the World Press Freedom Index is an important advocacy tool based on the principle of emulation between states.
- The Index ranks 180 countries and regions according to the **level of freedom available to journalists**.

Why in News?

- Reporters Without Borders has released its World Press Freedom Index 2020.

Highlights of the report

- India has dropped two places on the Index to be ranked 142nd out of 180 countries.
- As per the report, with no murders of journalists in India in 2019, as against six in 2018, the security situation for the country's media might seem, on the face of it, to have improved.
- However, it cited constant press freedom violations, including police violence against journalists, ambushes by political activists, and reprisals instigated by criminal groups or corrupt local officials.
- South Asia in general features poorly on the index, with Pakistan dropping three places to 145, and Bangladesh dropping one place to 151.
- Norway is ranked first in the Index for the fourth year running.

Reporters Without Borders

- Reporters Without Borders, is an international **non-profit organisation** founded in France in 1985.
- It works to safeguard the right to freedom of information.

3. Global Energy Review 2020

What's in the news?

- The **International Energy Agency (IEA)** has released its Global Energy Review report 2020, detailing the impact of Covid-19 on global energy demands.

Highlights of the report

- The covid-19 pandemic represents the biggest shock to the global energy system in more than seven decades and the global energy demand is set to plunge this year.
- Energy consumption, especially electricity and refinery products, is typically linked to overall demand in an economy.
- The drop in energy demand is likely to result in a **record annual decline in carbon emissions of almost 8%**.
- This would be the largest decrease in emissions ever recorded – nearly six times larger than the previous record drop of 400 million tonnes in 2009 that resulted from the global financial crisis.

- India's 40-day long lockdown has resulted in a **30% fall in the country's energy demand**.

About IEA

- The IEA is an autonomous body **within the Organization for Economic Co-operation and Development (OECD) framework**.
- Created in 1974, the IEA works to ensure reliable, affordable and clean energy for its member countries and beyond. Its main areas of focus are energy security, economic development, environmental awareness and engagement worldwide.
- The IEA is made up of 30 member countries. Before becoming a member country of the IEA, a candidate country must meet several criteria.
 - For eg: It must have crude oil or product reserves equivalent to 90 days of the previous year's net imports.
 - It must have in place a demand restraint program to reduce national oil consumption by up to 10 per cent.
- **India** is an associate member of IEA.
- IEA is headquartered in Paris, France.

POLITY

1. Centre expands domicile rule for J&K

Background

- Before August 5, 2019– when the government abrogated the region's special status under Article 370 of the Constitution and divided it into two Union Territories – the **Jammu and Kashmir Assembly** was constitutionally empowered to **define a resident** of the erstwhile state.
- These defined residents were **alone eligible to apply for jobs or own immovable property.**

What's in the news?

- Recently, the central government introduced a new definition of domicile in the union territory of Jammu and Kashmir through the Jammu and Kashmir Reorganisation (Adaptation of State Laws) Order, 2020.
- The new definition **allows eligible non-locals to apply for the domicile certificate.**
- Domicile certificates have been made a **basic eligibility condition for appointment to any post** under the Union Territory of J&K.

Who can be domiciled or employed in J&K?

- The new rules lists certain conditions one should fulfil to qualify as a domicile applicant:
 - applicants should have resided in J&K for 15 years, or
 - studied in the state for seven years and appeared in either the Class 10 or the Class 12 examination there.
- Children of central government officers, and employees of public sector undertakings and banks, central universities etc who have served in

Jammu & Kashmir for 10 years will also be eligible to apply for a domicile certificate.

- **Migrants registered by the Relief and Rehabilitation Commissioner** need not fulfil the aforementioned requirements and will automatically be eligible for a domicile certificate.
- The domicile status also applies to children of such residents of J&K who reside outside J&K in connection with their employment or business or other professional or vocational reasons but their parents should fulfil any of the conditions provided. It will allow **West Pakistan refugees and children of women who married non-locals** to apply for jobs in J&K.
- The new rule empowered **Tehsildars** within their territorial jurisdiction to issue domicile certificates. There is a timeline of 15 days for issuance of certificates and the officer not able to do so will be penalised Rs 50,000 of his or her salary.

2. MPLADS

About MPLADS

- The Members of Parliament Local Area Development Scheme (MPLADS) is a programme first launched 1993, aimed towards **providing funds for developmental works recommended by individual MPs.**
- The objective of the scheme is to enable MPs to recommend works of developmental nature with emphasis on the creation of durable community assets based on the locally felt needs to be taken up in their Constituencies.
- Under the MPLADS scheme, each MP has the choice of suggesting to the District Collector works to the tune of **Rs 5**

crore per annum to be taken up in his or her constituency.

- Under MPLADS, the role of the MPs is limited only upto recommendation of works. Thereafter, it is the responsibility of the **District Authority** to sanction, execute and complete the works recommended by Members of Parliament within the stipulated time.
- The Scheme is administered by the **Ministry of Statistics and Programme Implementation**, which is responsible for policy formulation, release of funds and also for prescribing a monitoring mechanism for its implementation.

Allocation for SC & ST

- The guidelines recommend MPs to suggest works costing at least 15 per cent of their MPLADS entitlement for the year for areas inhabited by Scheduled Caste population and 7.5 per cent for areas inhabited by ST population.
- In case there is insufficient tribal population in the area of Lok Sabha Member, they may recommend this amount for the creation of community assets in tribal areas outside of their constituency but within their State of election.

Jurisdiction

- Lok Sabha Members can recommend works within their Constituencies and Elected Members of Rajya Sabha can recommend works within the State of Election (with select exceptions).
- Nominated Members of both the Rajya Sabha and Lok Sabha can recommend works anywhere in the country.

What kind of projects are executed?

- The guidelines lay down a number of development works, including construction of railway halt stations, providing financial assistance to recognised educational bodies, cooperative societies, bar associations,

installing CCTV cameras, and rainwater harvesting systems,

- The MPLADS funds can be merged with other schemes such as MGNREGA and Khelo India.
- MPLADS was held constitutionally valid by the Supreme Court in its May 6, 2010 judgment.

Why in News?

- Recently, the Union Cabinet gave its nod to the temporary suspension of MPLAD Funds during 2020-21 and 2021-22 in view of the adverse impact of the outbreak of COVID-19 in India.
- The consolidated amount of MPLAD Funds for 2 years – Rs 7,900 crores – will go to the Consolidated Fund of India.

3. Public utility services

Industrial Disputes Act, 1947

- The Industrial Disputes Act, 1947 came into existence in 1947.
- It was enacted to make provisions for prevention and settlement of industrial disputes and for providing certain safeguards to the workers.
- Under this Act, authorities like Conciliation Officers, Courts of Inquiries, reference of disputes to Boards, Court and Tribunals, powers and duties of authorities, prohibition of strikes and lockouts, penalties for contravention of the provisions of the Act etc. are incorporated.

Public utility services

- As per Section 2 (n) (vi) of the Industrial Disputes Act, 1947, the 'appropriate Government' may declare any industry specified in the first Schedule of the Industrial Disputes Act, 1947 to be a public utility service for a **period of six months** by issuing a Notification in the Official Gazette which may extend from time to time for **any period not exceeding six months** if in the opinion

of the appropriate Government **public emergency or public interest** requires extension.

- In case of **strike or lockout** in respect of industries declared as public utility services, **prior notice is compulsory** either by employees or by management, respectively to the government.
- Strike & lockout have been defined in the Industrial Disputes Act as under—
 - Strike means a cessation of work by a body of persons employed in any industry acting in combination, or a concerted refusal, or a refusal under a common understanding, of any number of persons who are or have been so employed to continue to work or to accept employment.
 - Lockout means temporary closing of employment or the suspension

of work, or the refusal by an employer to continue to employ any number of persons employed by him.

Why in News?

- The Ministry of Labour & Employment has issued a notification declaring **banking industry** as a public utility service for six months till October 21 under the provisions of the Industrial Disputes Act.
- Bringing banking services under the provisions of this Act means that the banking sector **would not see any strikes by employees or officers** during the operation of the law starting from April 21.

INTERNATIONAL RELATIONS

1. Yemen

What's in the news?



- Yemen's separatist group Southern Transitional Council (STC) announced that it would establish self-rule in areas under its control.
- The move threatens to renew conflict in the country.

2. Brexit transition

Background

- Brexit ("British exit") refers to the United Kingdom's decision in a 2016 referendum to leave the European Union (EU), which is a group of 27 countries that operates as a cohesive economic and political block.
- The process of leaving the EU formally began in 2017, when the former British Prime Minister Theresa May triggered **Article 50** of the **Lisbon Treaty** (which gives any EU member state the right to quit unilaterally, and outlines the procedure for doing so).
- In January 2020, the process completed and Britain exited the EU and an 11-month transition period has started which ends on **December 31, 2020**.

What changes during the period and what remains the same?

- **Out of EU politics**
- With Brexit Day, the United Kingdom leaves all of the European Union's political institutions. The UK had 73 Members of European Parliament, and they automatically lost their seats.
- **EU rules apply**
- During the transition period, the UK will continue to obey EU rules and make payments to the EU. If it is involved in a legal dispute with an EU member country, the European Court of Justice will continue to have the final say.
- **New trade equations**
- Out of the EU, Britain will have to build new trade relationships with countries outside the Union.
- **Freedom of movement**
- During the transition, UK nationals will continue to be able to live and work in European Union countries. EU nationals who want to live and work in the UK, too, can do so.
- **EU Budget**
- The UK will for now continue to contribute to the EU Budget. Existing schemes that are funded by EU grants will continue to be funded.

Why in News?

- International Monetary Fund chief Kristalina Georgieva suggested that the UK should ask for an extension to its post-Brexit transition period to ease uncertainty at a time when the world economy is being hammered by the COVID-19 pandemic.

3. Special Drawing Rights

About Special Drawing Rights (SDRs)

- Special Drawing Rights is an international reserve asset, created by the **International Monetary Fund (IMF)** in 1969 to supplement its member countries' official reserves.
- SDRs are allocated to IMF members based on their individual IMF quotas. The SDR serves as the unit of account for the IMF for internal accounting purposes.
- The value of the SDR is based on a basket of **five** currencies—the U.S. dollar, the euro, the Chinese renminbi, the Japanese yen, and the British pound sterling.
- SDR (also called "*paper gold*") is **neither a currency nor a claim on the IMF**. It is a potential claim of IMF members on freely usable currencies.

- SDRs can be traded for freely usable currencies between IMF members through voluntary trading agreements. These agreements are facilitated by the IMF and can be done to adjust reserves or meet balance of payments needs.

Why in News?

- Finance minister Nirmala Sitharaman said India could not support a proposal of the IMF for new SDR allocation, which would provide all its 189 members with new foreign exchange reserves with no conditions.
- The Minister also expressed concerns that such a major liquidity injection could produce potentially costly side-effects if countries used the funds for extraneous purposes.

ART & CULTURE

1. National List of Intangible Cultural Heritage

What is it?

- The National List of Intangible Cultural Heritage (ICH) of India aims to **raise awareness about the various intangible cultural heritage elements** from different states of India at national and international level and ensure their protection.
- This list has been classified into **five broad domains** in which intangible cultural heritage is manifested:
 - Oral traditions and expressions, including language as a vehicle of the intangible cultural heritage;
 - Performing arts;
 - Social practices, rituals and festive events;
 - Knowledge and practices concerning nature and the universe;
 - Traditional craftsmanship.
- The present items in the list have been collated from the projects sanctioned under the scheme for **'Safeguarding the Intangible Cultural Heritage and Diverse Cultural Traditions of India'** formulated by the **Ministry of Culture** in 2013.
- As of now the list has more than 100 elements. It also includes the 13 elements of India that have already been inscribed on the **UNESCO Representative List of the Intangible Cultural Heritage of Humanity**.

Why in News?

- The **Ministry of Culture** has launched the National List of Intangible Cultural Heritage of India.
- **Note:** The National list can be accessed through this link:

<https://www.indiaculture.nic.in/national-list-intangible-cultural-heritage-ich>

Related information

About UNESCO List of the Intangible Cultural Heritage of Humanity

- UNESCO established its Lists of Intangible Cultural Heritage with the aim of ensuring better protection of important intangible cultural heritages worldwide and the awareness of their significance.

List of UNESCO Intangible Cultural Heritage of Humanity from India

- Tradition of Vedic chanting.
- Ramlila, the traditional performance of the Ramayana.
- Kutiyattam, Sanskrit theatre.
- Ramman, religious festival and ritual theatre of the Garhwal Himalayas.
- Mudi yettu, ritual theatre and dance drama of Kerala.
- Kalbelia folk songs and dances of Rajasthan.
- Chhau dance of Eastern India.
- Buddhist chanting of Ladakh.
- Sankirtana, ritual singing, drumming and dancing of Manipur.
- Traditional brass and copper craft of utensil making among the Thatheras of Jandiala Guru, Punjab.
- Yoga
- Nawrouz
- Kumbh Mela.

2. Meru Jatra festival

About the festival

- Meru Jatra marks the end of the 21-day-long festival of penance named 'Danda Nata'.
- Danda Nata is one of the most important traditional dance festivals organized in different parts of **Odisha** and particularly in the Ganjam District, the heartland of **ancient Kalinga Empire**.

- The Participants of Danda are called Danduas who undergo a lot of pain and hardship to appease the goddesses Kali as they believe that their desires would be fulfilled.
- The origin of the festival was traced to 8th and 9th AD after the decline of Buddhism in Orissa.

Why in News?

- Odisha's Ganjam district administration has banned the Meru Jatra festival and congregations related to it at temples to contain the spread of Covid-19 infection.

3. Ambubachi Mela

What is it?

- Ambubachi Mela is a 4 day fair which marks the annual menstruation of the goddess at **Kamakhya temple, Assam.**

- Kamakhya is a centre for **Tantra worship** and is one of 51 shakti peethas or holy sites for the followers of the Shakti cult, each representing a body part of the Sati, Lord Shiva's companion.
- The temple's sanctum sanctorum houses the yoni – female genital – symbolised by a rock.
- The religious congregation, organised from June 22-26 every year, draws lakhs of people from around the country and abroad.

Why in the news?

- Given the COVID-19 pandemic, Assam's Kamakhya Temple Management Committee has decided not to organize the annual Ambubachi Mela this year.

DEFENCE

1. Pitch Black

Exercise Pitch Black

- It is a **biennial** warfare exercise hosted by the **Royal Australian Air Force (RAAF)**.
- The exercise is an opportunity to interact with forces from across the globe.
- The Indian Air Force participated for the first time ever in Exercise Pitch Black 2018.

Why in News?

- Australia has informed India that Exercise Pitch Black 2020 — scheduled from July 27 to August 14 has been cancelled due to the COVID-19 situation.
- The next edition of Pitch Black is scheduled for 2022.

Similar exercise

- India's defence and strategic engagement with Australia has steadily gone up in recent years especially on the bilateral front with naval cooperation at the forefront.
- The bilateral naval exercise **AUSINDEX** early last year saw participation of the largest Australian contingent ever to India with over 1,000 personnel.

2. South China Sea dispute

Background

- Currently, among the most disputed topics in the world, in the South China Sea (SCS) dispute, the governments of six countries (Vietnam, Indonesia, Philippines, Brunei, Malaysia and China) claim that they are the rightful owner of **Paracel and Spratly islands**, and among them, China has been the most aggressive one.
- The disputed sea is composed of approximately 100 to 230 islands wherein small islands called islets are usually included in it. Submerged in water, shoals, banks, atolls, reefs and cays, which covers an area of approx. 180,000 sq. km.³
- The Chinese government claims an enormous area under what is known as the "**nine-dash line**" that is over 2000 km long, starting from mainland China and reaching waters close to Indonesia and Malaysia. China maintains that the area has been under Chinese rule since ancient times.
- China has been building military bases on small islands and also expanding the area of islands artificially.



Importance of the South China Sea

- This sea route, connecting Asia with Europe and Africa, is an **important trade passageway** for international trade.
- The **Strait of Malacca**, along with the **Lombok Strait** and **Sunda strait** are all connected with SCS and responsible for oil and LNG imports by major countries such as China, Japan, Indonesia, South Korea, and others from Gulf countries.
- It is estimated that around 15 million barrels each day are transported through the Strait of Malacca, making it the **second busiest strait** after the Strait of Hormuz in terms of oil transportation with respect to volume.
- The economy of China depends upon the oil import in which 80% of the oil is transported through the Strait of Malacca and then through SCS to China, which means that full control and easy access through this strait is the justification behind economic prosperity of the Chinese nation.
- Apart from the strategic importance of the SCS, this region is also blessed with **large deposits of natural resources beneath the sea.**

- Aside from oil and gas reserves, this region is also gifted with **one-third of the total marine biodiversity of the Earth**, which means that substantial revenue can also be generated through **fishing** alone.

PCA award

- Following the dispute, the Philippines filed a case against China in the **Permanent court of arbitration (PCA)** under the dispute settlement provisions of the **UNCLOS**.
- In 2016, a tribunal of the PCA issued its **ruling against China's claims in the South China Sea**. The tribunal's five arbitrators ruled overwhelmingly in the Philippines' favor after finding that China had violated the sovereign rights of the Philippines in its exclusive economic zone.
- However, **China refused to participate in the arbitration and rejected the outcome.**

Why in News?

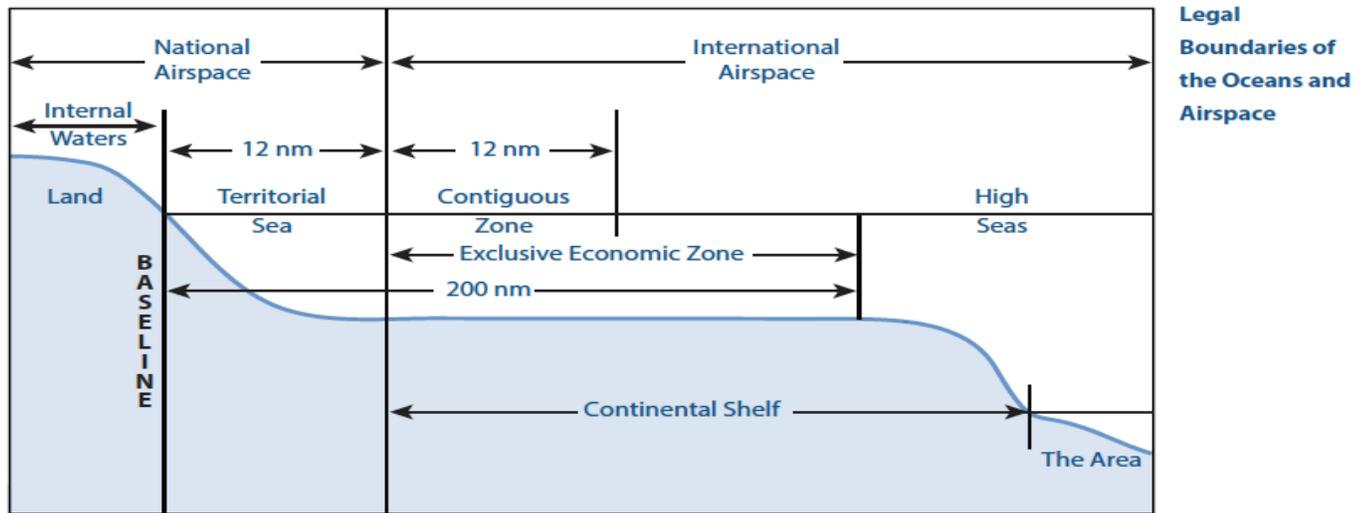
- Recently, China has unilaterally banned fishing in some parts of the disputed South China Sea.

About UNCLOS

- The United Nations Convention on the Law of the Sea (UNCLOS), also known as the **Law of the Sea Treaty**, is an international treaty which was adopted and signed in 1982. The Convention was formed to ensure freedom of shipping navigation at the sea.
- The Convention has created three new institutions on the international scene :
 - **the International Tribunal for the Law of the Sea,**

- **the International Seabed Authority,**
- **the Commission on the Limits of the Continental Shelf.**

- **India** is party to the UNCLOS.
- UNCLOS classifies marine areas into five zones. They are:
 - Territorial sea
 - Contiguous zone
 - Exclusive economic zone
 - Continental shelf
 - High Sea



nm – nautical mile

- **Territorial sea**
- According to UNCLOS, the territorial sea can be defined as the area which extends up to **12 nautical miles** from the baseline of a country's coastal state. The territorial sea is under the jurisdiction of that particular country; however, foreign ships (both merchant and military) ships are allowed passage through it.
- This type of passage of territorial passage of foreign ships is known as an **innocent passage**. However, the right to the innocent passage can be suspended if there is a threat to the security of the coastal state.
- **Contiguous Zone**

- The contiguous zone can be defined as the belt which **extends 12 nautical miles beyond the territorial sea limit**.
- A coastal state's control on this area is limited to prevention of actions which can infringe its customs, fiscal, and immigration laws. It can also act if any activity in the contiguous zone threatens regulations in the territorial sea.
- **Exclusive economic zone**
- The exclusive economic zone can be defined as a belt of water which **extends up to 200 nautical miles** from the baseline of the coastal state. Thus it **includes both territorial sea and contiguous zone**.
- The exclusive economic zone provides the coastal state **control over all**

economic resources such as fishing, mining, oil exploration, and marine research.

- The coastal state also has jurisdiction regarding protection and preservation of natural resources and marine environment.
- **Continental Shelf**
- The continental shelf can be defined as the area whose outer limit **shall not exceed 350 nautical miles from the baseline** or **shall not exceed 100 nautical miles from the 2500 meters isobath**.
- *Isobath is a line connecting points of equal underwater depth.*
- The coastal state has exclusive rights for exploring and exploiting its natural resources in this area. The state also has the exclusive rights to authorize and regulate drilling on the shelf for all purposes.
- **High Seas**
- High seas can be defined as the part of the sea that is **not included** in the exclusive economic zone, in the territorial sea, or in the internal waters of a coastal state or archipelagic waters of an archipelagic state.
- High seas are **open to all states** for freedom of navigation, freedom of overflight, freedom to construct artificial islands installation, freedom of fishing, and freedom of scientific research.

About PCA

- The Permanent Court of Arbitration was established by the **Convention for the Pacific Settlement of International Disputes**, concluded at The Hague in 1899 during the first Hague Peace Conference.
- The 1899 Convention was revised at the second Hague Peace Conference in 1907.
- The PCA is not a court in the traditional sense but provides services of an

arbitral tribunal to resolve disputes that arise out of international agreements between member states, international organizations or private parties.

- The cases span a range of legal issues involving territorial and maritime boundaries, sovereignty, human rights, international investment, and international and regional trade.
- The PCA has **no sitting judges: the parties themselves select the arbitrators**.
- The PCA is an official United Nations Observer. It is headquartered in The Hague, Netherlands.

Members

- The PCA has 122 Contracting Parties which have acceded to one or both of the PCA's founding conventions (1899 and 1907 Conventions).
- **India is a party** to the PCA according to the convention of 1899.

3. Red Flag air exercise

About Red Flag air exercise

- It is the **U.S. Air Force's** flagship multilateral air exercise.
- Participants often include both the U.S. and allied nations' combat air forces.

Why in News?

- The U.S. Air Force has cancelled Phase-I of its Red Flag air exercise, scheduled in Alaska from April 30 due to COVID-19.
- The Indian Air Force was to take part in the exercise with its Sukhoi Su-30 fighter jets.