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1.INDIAN SOCIETY & POLITY

1. Section 269 and 270 of IPC

Why in News?

- Earlier an individual, who failed to disclose travel history following return from Dubai, and who later tested positive for COVID-19, was booked under Section 270 of the Indian Penal Code (IPC).

Highlights:

- Police had booked Bollywood singer Kanika Kapoor under the same Section, as well as Sections 269 and 188 IPC, after she attended at least three gatherings in Lucknow, including a party where political leaders were present, and tested positive for the new coronavirus.

- There have been other instances across the country where Sections 269 and 270 have been used to book persons defying quarantine orders for containing the spread of the pandemic.

- Sections 269 (negligent act likely to spread infection of disease dangerous to life) and 270 (malignant act likely to spread infection of disease dangerous to life) come under Chapter XIV of the Indian Penal Code– 'Of Offences Affecting The Public Health, Safety, Convenience, Decency and Morals'.

- While Section 269 provides for a jail term of six months and/or fine, Section 270 provides for a jail term of two years and/or fine.

- In Section 270, the word 'malignantly' indicates a deliberate intention on the part of the accused. During the coronavirus outbreak, penal provisions, such as Sections 188, 269 and 270 of the IPC, are being invoked to enforce the lockdown orders in various states.

- Both Sections have been used for over a century to punish those disobeying orders issued for containing epidemics.

- The Sections were similarly enforced by colonial authorities during outbreaks of diseases such as smallpox and bubonic plague.

- Recent instances of invocation include one on March 2018, when the Health Ministry said that failure by clinical establishments to notify a tuberculosis patient to the nodal officer and local public health staff can be punished under Section 269 and 270.

2. Restrictions on court hearings lawful, says Supreme Court

Why in News?

- The Supreme Court recently deemed all restrictions imposed on people from entering, attending or taking part in court hearings as lawful in the wake of the COVID-19 pandemic.

Highlights:

- The court said that restrictions were in tune with the social distancing norms and best public health practices advocated to contain the contagion.
- Invoking its extraordinary Constitutional powers: The court invoked its extraordinary Constitutional powers under Article 142 to step away from the convention of open court hearings. The open court system ensures transparency in administration of justice.

Videoconferencing:

- The apex court bench assembled to suo motu streamline the videoconferencing guidelines for courts.
- In a series of directions, the apex court allowed the High Courts to decide the modalities for the temporary transition to the use of videoconferencing technologies in their respective States.
- District courts in each State would adopt the mode of videoconferencing prescribed by the respective High Courts.
- Helplines would be set up to receive and rectify technical complaints.

Article 142 of the Constitution:

- Article 142 provide a unique power to the Supreme Court, to do "complete justice" between the parties, i.e., where at times law or statute may not provide a remedy, the Court can extend itself to put a quietus to a dispute in a manner which would befit the facts of the case.
- Article 142(1) states that "The Supreme Court in the exercise of its jurisdiction may pass such decree or make such order as is necessary for doing complete justice in any cause or matter pending before it, and any decree so passed or order so made shall be enforceable throughout the territory of India in such manner as may be prescribed by or under any law made by Parliament and, until provision in that behalf is so made, in such manner as the President may by order prescribe".

3. The Nihangs

Why in News?

- The Patiala incident, in which a group of Nihangs attacked a Punjab police party when stopped for a curfew pass, and the subsequent seizure of weapons and narcotics, has put the spotlight on the Nihangs.

Highlights:

- Etymologically the word nihang in Persian means an alligator, sword and pen but the characteristics of Nihangs seem to stem more from the Sanskrit word nihshank which means without fear, unblemished, pure, carefree and indifferent to worldly gains and comfort.

Nihangs:

- Nihang is an order of Sikh warriors, characterised by blue robes, antiquated arms such as swords and spears, and decorated turbans surmounted by steel quoits. This order can be traced back to the creation of the Khalsa by Guru Gobind Singh in 1699.
- As per an account by the East India Company's Colonel James Skinner, Khalsa Sikhs were divided into two groups: Those who put on blue attire which Guru Gobind Singh used to wear at the time of battle and those who do not follow any restrictions on the colour of their dress though both of them follow the profession of soldiery.
- Nihangs observe the Khalsa code of conduct in its strictest sense. They do not profess any allegiance to an earthly master. Instead of saffron they hoist a blue Nishan Sahib (flag) atop their shrines.
- The Nihangs are fond of a popular drink called shardai or sharbati degh (sacrament drink) which contains grounded almonds, cardamom seeds, poppy seeds, black pepper, rose petals and melon seeds.
- Nihangs had a major role in defending the Sikh panth after the fall of the first Sikh rule (1710-15) when Mughal governors were killing Sikhs, and during the onslaught of Afghan invader Ahmed Shah Durrani (1748-65).
- The Nihangs today constitute a small community. For the whole year they remain stationed at their respective deras (centres) but set out on their annual pilgrimage of Anandpur Sahib, Damdama Sahib Talwandi Sabo and Amritsar, take part in religious events and exhibit their martial skills and horsemanship.

4. National List of Intangible Cultural Heritage (ICH) of India Launched

Why in News?

- Union Minister for Culture (I/C) has launched the National List of Intangible Cultural Heritage (ICH) of India in New Delhi.

Highlights:

- India houses a repository of unique Intangible Cultural Heritage (ICH) traditions, 13 of which have also been recognized by UNESCO as Intangible Cultural Heritage of Humanity.
- The National ICH List is an attempt to recognize the diversity of Indian culture embedded in its intangible heritage.
- It 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 initiative is also a part of the Vision 2024 of the Ministry of Culture.
- 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.
- The list functions as a tentative list for any potential inscriptions on the UNESCO list of Intangible Cultural Heritage.

Classification:

- Following UNESCO's 2003 Convention for Safeguarding of Intangible Cultural Heritage, 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 List Includes:

- **Assam:** The traditional folk festival of Pachoti, where the birth of a baby, particularly a male infant as the tradition relates to the birth of Krishna is celebrated with relatives and neighbours.

- **Delhi:** The oral traditions of the transgender community called Kinnar Kanthgeet and compositions of Ameer Khusro.

- **Gujarat:** Patola silk textiles from Patan with its geometric and figurative patterns also made it to the list.

- **Rajasthan:** The practice of tying a turban or safa across Rajasthan was a part of the list.

- **Jammu and Kashmir:** The Kalam Bhat or Qalambaft gharana of Sufiana music in Budgam district and from Ladakh. The Buddhist chanting across both Leh and Kargil districts were on the list of intangible cultural heritage.

- **Manipur:** The making of khor, a rice beer, by the Tangkhul community in Manipur as well as other crafts associated with it, like making gourd vessels and wicker baskets, were also on the list.

- **Kerala:** Martial art form, Kalaripayuttu, and the practice of making designs at the entrance of homes and temples called kolam in Kerala, Andhra Pradesh, Tamil Nadu and Andhra Pradesh were also included in the list.

Different Forms of Shadow Puppet Theatre:

- Chamadyacha Bahulya in Maharashtra,
- Tolu Bommalatta in Andhra Pradesh,
- Togalu Gombeyatta in Karnataka,
- Tolu Bommalattam in Tamil Nadu,
- Tolpava Kuthu in Kerala and Ravanchhaya in Orissa — have also been included.

- Through consultation from experts and other stakeholders like UNESCO, this list could also help strengthen the ICH inventory of India, which functions as a 'tentative list' for any potential inscriptions on the UNESCO list of Intangible Cultural Heritage.

5. Draft Electricity Act(Amendment) Bill 2020

Why in News?

- For further development of the power sector, the Ministry of Power has issued a draft proposal for amendment of Electricity Act, 2003 in the form of draft Electricity Act (Amendment) Bill, 2020 for comments or suggestions from Stakeholders.

Highlights:

- Supply of quality power at affordable prices is essential for sustained growth of the economy of the country.
- Suggestions have been invited from stakeholders within twenty one days.
- Major amendments proposed in the Electricity Act are as follows:
- Viability of Electricity Distribution companies (Discoms):
- **Cost reflective Tariff:** To eliminate the tendency of some Commissions to provide for regulatory assets, it is being provided that the Commissions shall determine tariffs that are reflective of cost so as to enable Discoms to recover their costs.
- **Direct Benefit Transfer:** It is proposed that tariff be determined by Commissions without taking into account the subsidy, which will be given directly by the government to the consumers.

Sanctity of Contracts:

- Establishment of Electricity Contract Enforcement Authority: A Central Enforcement Authority headed by a retired Judge of the High Court is proposed to be set-up with powers of the Civil Court to enforce performance of contracts related to purchase or sale or transmission of power between a generating, distribution or transmission companies.
- Establishment of adequate Payment Security Mechanism for scheduling of electricity: It is proposed to empower Load Dispatch Centres to oversee the establishment of adequate payment security mechanism before scheduling dispatch of electricity, as per contracts.

Strengthening the Regulatory Regime:

- Strengthening of the Appellate Tribunal (APTEL): It is proposed to increase the strength of APTEL to seven apart from the Chairperson so that multiple benches can be set-up to facilitate quick disposal of cases. It is also proposed to further empower the APTEL to enforce its decisions.
- Doing away with multiple Selection Committees: It is proposed to have one Selection Committee for selection of Chairpersons and Members of the Central and State Commissions and uniform qualifications for appointments of Chairperson and Members of Central and State Electricity Regulatory Commissions.
- Penalties: In order to ensure compliance of the provisions of the Electricity Act and orders of the Commission, section 142 and section 146 of the Electricity Act are proposed to be amended to provide for Higher Penalties.

Renewable and Hydro Energy:

- National Renewable Energy Policy: It is proposed to provide for a policy document for the development and promotion of generation of electricity from renewable sources of energy.
- It is also proposed that a minimum percentage of purchase of electricity from hydro sources of energy is to be specified by the Commissions.
- Penalties: It is being further proposed to levy penalties for non-fulfilment of obligation to buy electricity from renewable and/or hydro sources of energy.

Miscellaneous:

- Cross border trade in Electricity:Provisions have been added to facilitate and develop trade in electricity with other countries.
- Franchisees and Distribution sub licensees: Many States Distribution Companies have been assigning the task of distribution of electricity in a particular area or city to Franchisees / Sub-Distribution Licensees. However, there was a lack of clarity regarding the legal provisions related to this.
- It is proposed to provide that the Distribution Companies, if they so desire, may engage Franchisees or Sub-Distribution Licensees to distribute electricity on its behalf in a particular area within its area of supply, however, it will be the DISCOM which shall be the licensee, and therefore, ultimately responsible for ensuring quality distribution of electricity in its area of supply.

1. Medical Devices Notified as Drugs from 1st April

Why in News?

- The government's regulation to classify all Medical Devices as Drugs for the prime purpose of quality control and price monitoring.

Highlights:

- The government is regulating 24 class of medical devices which have been notified as drugs under Drugs & Cosmetics Act, 1940 and Drugs & Cosmetics Rules, 1945.
- Of the above, 4 medical devices viz. (i) Cardiac Stents (ii) Drug Eluting Stents (iii) Condoms and (iv) Intra Uterine Device (Cu-T) are scheduled medical devices for which ceiling prices have been fixed.
- The remaining non-scheduled medical devices which are notified as drugs, NPPA is currently monitoring Maximum Retail Prices.
- Thus, with effect from 1st April, 2020, all Medical Devices shall be regulated by the Government as Drugs for quality control and price monitoring.
- Therefore, the Maximum Retail Prices of all the Medical Devices would be monitored by the Government to ensure that no manufacturer/importer increases the MRP of a drug more than ten percent of MRP during preceding twelve months.
- Further, with the Essential Commodities Act, 1955, the manufacturer/importer will also be liable to deposit the overcharged amount along with interest thereon from the date of increase in price in addition to penalty.

Background:

- **Need for the Changes in rules:**
  - ✓ The need for change in rules came in following media reports which brought to the fore the faulty hip implants marketed by pharma major Johnson & Johnson.
- **Present State of Regulation:**
  - ✓ Drugs fall under Concurrent List, in this regard, GOI enacted Drugs and Cosmetics Act, 1940.
  - ✓ Further, some of the Medical devices were classified as drugs in 1982.
  - ✓ Presently, only 23 categories of medical devices have been classified as drugs under Medical Devices Rules, 2017.

- ✓ Of these, only a few including cardiac stents, drug eluting cardiac stents, condoms, intrauterine devices, have been brought under price control.

- **Existing Penal provisions:**
  - ✓ There are various penal provisions under the Drugs and Cosmetics Act, 1940 for various kinds of offences.
  - ✓ For manufacturing or sale of substandard items: punishable with imprisonment of at least 10 years, which may extend to imprisonment for life.

MEDICAL DEVICES AND THE EXPLOITATION OF PATIENTS

	Device		Wholesale price (₹)	MRP (₹)	You pay extra...	
An FDA Maharashtra report sent **June 2017** urging Centre to **"initiate steps in public interest"**	Urine bag	You pay nearly 6 times more	14	80		5.7 times
	Face mask: a dozen		1.30	6		4.6
	Oxygen mask		290	1,100		3.8
	Disposable endotracheal tube		63.00	180		2.9
	Arterial catheter set		800-900	2,200-2,500		2.8
	Balloon catheter (Angioplasty)		3,000-9,945	20,000-28,000		2.2-6.7
	Guiding catheter (Angioplasty)		2,346-4,321	5,000-10,500		2.1-2.9
	Imported intraocular lens		3,750-15,200	5,400-26,550		1.4-2.8

	Device		Wholesaler price (₹)	MRP (₹)	You pay extra...	
In 2014, Odisha drug controller sent a similar report	IV set	10 times more	9.80	98		10
	Blood transfusion set		14.70	115		7.8
	IV catheter with injection port		35.85	110		3.1
	Disposable syringe 10ml		4.40	11		2.5
	Spinal needle 23		44.40	105		2.4
	Oncofusion set		252	583		2.3
	Tracheostomy tube		264.50	621		2.3
	Urinary catheter 8 (Foleys)		178.50	295		1.7

Drugs Technical Advisory Board (DTAB):

- It is the highest statutory decision-making body on technical matters related to drugs in the country.
- It is constituted as per the Drugs and Cosmetics Act, 1940.
- It is part of the Central Drugs Standard Control Organization (CDSCO) in the Ministry of Health and Family Welfare.

CDSCO:

- The Central Drugs Standard Control Organisation (CDSCO) under Directorate General of Health Services, Ministry of Health & Family Welfare, Government of India is the National Regulatory Authority (NRA) of India.
- Under the Drugs and Cosmetics Act, CDSCO is responsible for
  - ✓ Approval of New Drugs
  - ✓ Conduct of Clinical Trials
  - ✓ Laying down the standards for Drugs
  - ✓ Control over the quality of imported Drugs in the country and

- ✓ Coordination of the activities of State Drug Control Organizations by providing expert advice with a view to bring about the uniformity in the enforcement of the Drugs and Cosmetics Act.
- ✓ CDSCO along with state regulators, is jointly responsible for grant of licenses of certain specialized categories of critical Drugs such as blood and blood products, Vaccine and Sera.

Drugs and Cosmetics Act, 1940 and Rules 1945:

- It regulates the import, manufacture and distribution of medicines in the country.
- It Also ensures that drugs and cosmetics sold in India are safe, effective and conform to state quality standards.
- Entrusts various responsibilities to central & state regulators for regulation of drugs & cosmetics.
- The related Rules,1945 contains provisions for classification of drugs under different schedules and prescribes guidelines for the storage, sale, display and prescription of each schedule.

2. MGNREGA Labourers Wage Hike

Why in News?

- The Central Government has approved a double-digit hike in the wages of manual labourers under Mahatama Gandhi National Rural Employment Guarantee Act (MGNREGA). The workers will get a wage hike from Rs. 13 to Rs. 34.

Highlights:

- The average per day wage rate for unskilled work under the Mahatma Gandhi National Rural Employment Guarantee Scheme will rise 11 per cent from ₹182 to ₹202 for the fiscal year 2020-21.
- For 2019-20, the average wage rate was almost unchanged, with a rise of just 1.6 per cent.

WAGE DISCREPANCY

State-wise wage rate ● Non-scheduled Areas ● Scheduled Areas

State	Wage
Jammu & Kashmir	₹186
Himachal Pradesh	●184 ●230
Punjab	₹240
Chandigarh	₹273
Haryana	₹281
Rajasthan	₹192
Gujarat	₹194
Madhya Pradesh	₹174
Daman & Diu	₹197
Dadra & Nagar Haveli	₹220
Maharashtra	₹203
Goa	₹254
Karnataka	₹249
Lakshadweep	₹248
Kerala	₹271
Uttarakhand	₹175
Uttar Pradesh	₹175
Chhattisgarh	₹174
Jharkhand	₹168
Bihar	₹168
Telangana	₹205
Andhra Pradesh	₹205
Puducherry	₹224
Tamil Nadu	₹224
Sikkim	₹177
Meghalaya	₹181
Assam	₹189
Arunachal Pradesh	₹177
Nagaland	₹177
Manipur	₹209
Mizoram	₹194
Tripura	₹177
West Bengal	₹191
Odisha	₹182
Andaman & Nicobar Islands	₹250/₹264

This notification came into effect from April 1, 2018

- Although the MGNREGA wage notified for 2020-21 is substantially higher, it continues to be 40-50 per cent lower than the minimum wages paid to unskilled agricultural workers.
- The minimum wages are revised twice a year by the chief labour commissioner, when the variable dearness allowance is adjusted to changes in the consumer price index.
- The prevailing rates for unskilled agricultural workers are between ₹347-383 per day, depending on the region of employment.

CPI-linked Changes:

- The MGNREGA wage revision is linked to the changes in the Consumer Price Index for Agricultural Workers (CPI-AL).
- A committee set up by the government had recommended using CPI-Rural (CPI-R) instead of the existing CPI-AL for revising MGNREGA wages every year.
- There is a big variation in the wages paid to MGNREGA workers across States.

MGNREGA:

- MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) is the largest work guarantee programme in the world.
- It was enacted in 2005 with the primary objective of guaranteeing 100 days of wage employment per year to rural households.
- It aims at addressing causes of chronic poverty through the 'works' (projects) that are undertaken, and thus ensuring sustainable development.

Funding:

- Funding is shared between the centre and the states.
- There are three major items of expenditure – wages (for unskilled, semi-skilled and skilled labour), material and administrative costs.
- The central government bears 100% of the cost of unskilled labour, 75% of the cost of semi-skilled and skilled labour, 75% of the cost of materials and 6% of the administrative costs.

3. Price Monitoring & Resource Unit (PMRU)

Why in News?

- Jammu & Kashmir Union Territory has become 12th State/UT where the Price Monitoring & Resource Unit (PMRU) has been set up by the National Pharmaceutical Pricing Authority (NPPA).

- PMRUs have already been set up by the NPPA in 11 States, including Kerala, Odisha, Gujarat, Rajasthan, Punjab, Haryana, Nagaland, Tripura, Uttar Pradesh, Andhra Pradesh and Mizoram.

PMRU:

- The PMRU, a registered society, shall function under the direct control and supervision of the State Drug Controller of Jammu & Kashmir.
- The unit shall be funded by the NPPA for its recurring and non-recurring expenses.
- The PMRU shall help the NPPA and the State Drug Controller in ensuring the 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.
- **The PMRU** will also collect samples of medicines, collect and analyse data and make reports with respect to availability and over-pricing of medicines for taking action under the provisions of the Drug Price Control Order (DPCO).
- **PMRU Mandate:** To track violation of prices of essential drugs and medical devices under the Drugs Price Control Order (DPCO).
- **PMRU Functions:** Offering technical help to the State Drug Controllers and the NPPA to
  1. Monitor notified prices of medicines,
  2. Detect violation of the provisions of the DPCO,
  3. Look at price compliance, collect test samples of medicines, and
  4. Collect and compile market-based data of scheduled as well as non-scheduled formulations.
  5. The PMRU is chaired by the State Health Secretary. The Member-Secretary would be Drugs Controller.

4. National Corona Survey

Why in News?

- Union Minister released the COVID 19 National Preparedness Survey 2020.

National Preparedness Survey on COVID-19 (National Corona Survey):

- The survey was conducted in 410 districts within 3 working days to attain a bird's eye view of the governance challenges of the nation while coping with the COVID-19 pandemic.

Objectives of the Survey:

- To develop a comparative analysis of COVID 19 preparedness across States.
- To highlight the main priorities and constraints of COVID 19 preparedness, as they are perceived by the civil servants working in the field.
- To access enabling factors in making institutional/logistics/hospital preparedness, etc.
- To capture trends to identify systemic and process related deficiencies, in combating COVID 19 in the districts of India.
- The survey was conducted across all districts of India, with responses from 410 civil servants who are providing field level leadership. District Collectors and IAS officers of (2014-2018) batches who have served as Assistant Secretaries in Government of India participated in the survey.

5. Empowered Group (Number 6)

Why in News?

- Empowered Group (number 6) constituted to address the issues pertaining to identification of problems, effective solutions and formulation of plans.

International Organisations:

- The six detailed meetings with UN Resident Coordinator for India, and country heads of WHO, UNICEF, UNFPA, UNDP, ILO, UN Women, UN-Habitat, FAO, World Bank, and Asian Development Bank.
- Outcome: Providing technical support in monitoring and surveillance systems, strengthening health and nutritional services, capacity building, financial resources and critical equipment support, etc.
- The UN in India has built a Joint Programme Response Plan and submitted it to NITI Aayog, defining their clear activities and deliverables in different sectors and States, where they are partnering with Union Ministries and State Governments.

Civil Society Organisations and Development Partners:

- Detailed deliberations with 40 plus prominent CSOs and NGOs working in different parts of the country and with different communities.
- Several challenges and issues raised by these CSOs were addressed to facilitate their working in the field during this crisis.

- CEO NITI Aayog has written to NGOs/ CSOs registered on the Darpan portal of NITI Aayog, appealing them
- to assist the government in identifying hotspots and deputing volunteers and care givers to deliver services to the elderly, persons with disabilities, children, transgender persons, and other vulnerable groups;
- to create awareness about prevention, social distancing, isolation, and combating stigma;
- to provide shelter to homeless, daily wage workers, and urban poor families;
- set up community kitchens for migrants.
- Industry Associations – CII, FICCI, ASSOCHAM, NASSCOM and Representatives from Industry
- The committee has opened up cross-sectoral dialogue within the private sector and start ups to engender collaboration among them to produce health equipment and PPEs.

Stakeholders:

- International organisations: The UN agencies, World Bank, Asian Development Bank
- NGOs: Civil Society Organisations and development partners
- Private sector: Industry associations – CII, FICCI, ASSOCHAM, NASSCOM
- The Empowered Committee is chaired by Amitabh Kant, CEO NITI Aayog.

6. Indian Migrants Across India

Why in News?

- The exodus of migrant workers from the cities following the announcement of the 21-day lockdown threw the spotlight on the vast number of Indians who live outside their home states.

Highlights:

- As per the 2011 census, the total number of internal migrants in India is 45.36 crore or 37% of the country's population.
- This includes inter-state migrants as well as migrants within each state, while the recent exodus is largely due to the movement of inter-state migrants.
- The annual net flows amount to about 1 per cent of the working age population.
- As per Census 2011, the size of the workforce was 48.2 crore people.
- This figure is estimated to have exceeded 50 crore in 2016 — the Economic Survey pegged the size of the migrant workforce at roughly 20 per cent or over 10 crore in 2016.

Estimates for 2020:

WHERE MOST COME FROM

17 districts account for 25% of male out-migration in the country. The map shows 16; Ganjam in Odisha is not mapped.
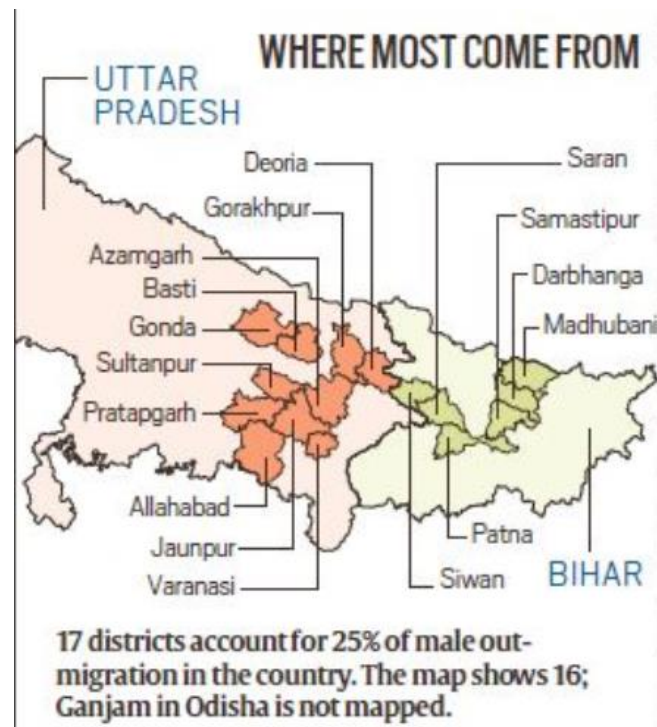
- While there is no official data for the inter-state migrants in the country, estimates for 2020 have been made by Professor Amitabh Kundu of Research and information System for Developing countries.
- His estimates, which are based on the 2011 Census, NSSO surveys and economic survey, show that there is a total of about 65 million inter-state migrants, and 33 per cent of these migrants are workers.
- By conservative estimates, 30 per cent of them are casual workers and another 30 per cent work on regular basis but in the informal sector.
- Uttar Pradesh and Bihar account for the origin of 25 per cent and 14 per cent of the total inter-state migrants, followed by Rajasthan and Madhya Pradesh, at 6 per cent and 5 per cent.

Migration in Cities:

- Delhi has a migration rate of 43%, of whom 88% are from other states and 63% are from rural areas.
- Mumbai has a migration rate of 55%, with 46% migrants from other states and 52% from rural areas.
- Surat has a migration rate of 65%, with 50% migrants from other states and 76% from Rural Areas.

District Wise Migration Data:

- District-wise migration data in the Economic Survey for 2016-17 show that the highest influx of migrants within the country is seen in city-districts such as Gurugram, Delhi and Mumbai along with Gautam Buddh Nagar (Uttar Pradesh); Indore, Bhopal (Madhya Pradesh); Bangalore (Karnataka); Thiruvallur, Chennai, Kancheepuram, Erode, Coimbatore (Tamil Nadu).

7. Smart City Missions Integrated Data Dashboard

Why in News?

- Smart Cities of Pune, Surat, Bengaluru and Tumakuru are using the integrated data dashboards, to provide up-to-date information about the status of coronavirus in different administrative zones of their cities.

Integrated Data Dashboard:

- A data dashboard is an information management tool that visually tracks, analyzes and displays key performance indicators (KPI), metrics and key data points to monitor the health of a business, department or specific process.

Features:

- Spatial Mapping of the affected areas is made available to citizens using geo-spatial information systems.
- Using heat-mapping technologies and predictive analytics, the city administration will develop a containment plan and the containment zones get reflected on the dashboard.
- The Smart City's integrated dashboard also monitors the quarantine facilities and tracks the health of suspected patients and their contacts placed under home quarantine.
- Regular updates to the citizens: In addition to providing the overall statistics on tested, confirmed, active, recovered and death cases, the dashboard provides the trends and patterns on the spread of COVID-19 within city, in terms of cumulative cases (each day), number of new confirmed cases reported (date wise), age-wise distribution of cases, zone-wise distribution and gender-wise distribution.
- 'War room' to use technology to conduct surveillance on people within 8-km radius of a confirmed patient, so as to contain the spread of the virus.
- The Integrated Command and Control Centers are implementing initiatives such as
  - ✓ CCTV Surveillance of Public Places

- ✓ GPS Tracking of Healthcare workers
- ✓ Virtual Training to Doctors & Healthcare professionals
- ✓ Real-time tracking of Ambulances & Disinfection Services
- ✓ Medical Services through Video Conferencing and Tele-Counselling and Tele-Medicine.

8. NCC Cadets Start Serving People During COVID-19

Why in News?

- Civil and police administration have started requisitioning for services of senior division National Cadet Corps (NCC) cadets in fight against Coronavirus (COVID-19) pandemic.

National Cadet Corps:

- The National Cadet Corps is the youth wing of Armed Forces with its Headquarters at New Delhi.
- It is a Tri-Services Organisation, comprising the Army, Navy and Air Wing, engaged in grooming the youth of the country into disciplined and patriotic citizens.
- It is open to all regular students of schools and colleges on a voluntary basis. The students have no liability for active military service. A student enrolled into NCC is referred to as a "Cadet".
- The NCC Day is observed on the four Sunday of November.
- Its motto is 'Unity and Discipline'.
- At the National level, the Ministry of Defence deals with NCC while in all States, Education Ministry of respective states deals with NCC.
- NCC is headed by the Director General (DG), an Army Officer of the rank of Lieutnant General. The NCC in India was formed with the National Cadet Corps Act of 1948. National Cadet Corps can be considered as a successor of the University Officers Training Corps (UOTC) which was established by the British in 1942.
- A committee headed by Pandit H.N. Kunzru recommended a cadet organization to be established in schools and colleges at a National Level.

9. iGOT e-learning Platform

Why in News?

- The Department of Personnel and Training, under the Government of India, launches a digital platform to train all healthcare and COVID-19 warriors of India.

Highlights:

- The e-learning platform is for all front-line workers to equip them with the training and updates in coping with the coronavirus pandemic.
- Appropriate training will also prepare them for the subsequent stages of the pandemic.
- The target group is Doctors, Nurses, Paramedics, Hygiene Workers, Technicians, Auxiliary Nursing Midwives (ANMs), Central & State Govt. Officers, Civil Defence Officials, various Police Organisations, National Cadet Corps (NCC), Nehru Yuva Kendra Sangathan (NYKS), National Service Scheme (NSS), Indian Red Cross Society (IRCS), Bharat Scouts & Guides (BSG) and other volunteers.

iGOT Platform:

- The platform delivers curated, role-specific content to each learner at his place of work or home and to any device of his choice.
- iGOT platform is designed to population scale, and will provide training to around 1.50 crore workers and volunteers in the coming weeks.
- To begin with, nine courses on iGOT have been launched on topics like Basics of COVID, ICU Care and Ventilation Management, Clinical Management, Infection Prevention through PPE, Infection Control and Prevention, Quarantine and Isolation, Laboratory Sample Collection and Testing, Management of COVID 19 Cases, COVID 19 Training.
- Through its customized approach COVID warriors can learn about critical areas from this one-stop source and respond to the prevailing and emergent situations, by keeping themselves updated in a real-time manner.
- The platform is well equipped to cater to the demands of unlimited requests of learning at any time anywhere. The platform can be accessed by following an easy to use manual for desktop and mobile versions, thereby making it accessible for all.

10. Problems in Villages Amid COVID-19 Outbreak

Why in News?

- With the influx of thousands of migrant labourers into their villages, the houses in villages, which are often one or two-room dwellings with an average seven family members to accommodate, are some of the worst places where one can hope to contain the deadly disease.

Highlights:

- Along with the absence of running water within households, the possibility of common points in village arenas becoming hotspots for this deadly contagion becomes manifold.
- Only a few States have been able to involve gram panchayats very effectively in this situation. **For Example,** community kitchens are run by local bodies in Kerala, where home delivery of cooked food is spiking as the situation demands.

Suggestions for Gram Panchayats:

- **Panchayats can Work Exactly in Three areas:**
  - ✓ Awareness Generation,
  - ✓ Setting up Isolation Conditions, and
  - ✓ Streamlining social security measures Announced by the Central and State Governments.
  - ✓ A model needs to be established, with concrete standard operating procedures and best practices that can be replicated throughout rural India.
  - ✓ Organisations such as Professional Assistance For Development Action (PRADAN) have been trying to influence gram panchayats in many States to coordinate with the administration to use the resources of panchayats. This should be done more.
  - ✓ Even with the harvesting of wheat almost over in States such as Madhya Pradesh; people are still out in the fields, but once they are done with their work it is the panchayat that can do the work effectively to confine people within their homes with adequate awareness generation.
  - ✓ Community policing with the active engagement of panchayats, by collaborating with women's collectives, is a potential area where a people-led movement can be kick-started in a short time span.
  - ✓ Despite the financial packages being rolled out to avert panic about basic food requirements, many will be left out as documentation is core to availing these social-service provisioning schemes. Without gram panchayats, it is not possible to deploy any system to adequately take prompt actions to include the excluded.

11. TRIFED

Why in News?

- TRIFED in collaboration with UNICEF & WHO launched digital campaign through webinar for SHGs to ensure that Tribal Gatherers carry on their Work Safely.

Highlights:

- TRIFED launched through a Webinar, Virtual training to its Trainers and Self Help Groups (SHGs) on basic orientation on Covid-19 response and key preventive measures to ensure tribal gatherers carry on their work safely.

- It is aimed to reach more than 18,000 participants and would cover tribal regions across all the 27 States.

- To ensure tribal gatherers carry on their work safely, TRIFED has collaborated with UNICEF and WHO for developing a digital communication strategy for promoting a digital campaign for Self Help Groups (SHGs) involved in this work, highlighting the importance of Social Distancing.

- UNICEF is providing the necessary support to the SHG Centres in the form of Digital Multimedia content, Webinars for Virtual trainings, Social Media campaigns (on social distancing, home quarantine, etc.) and Vanya Radio.

- Additionally, TRIFED has reached out to the Art of Living Foundation's #iStandWithHumanity Initiative with a Stand with Tribal Families component in providing the much-needed food and ration for survival of the tribal community.

12. Operation SHIELD

Why in News?

- The Delhi government will carry out 'Operation SHIELD' at 21 locations identified as containment zones in the Delhi.

- Operation SHIELD includes sealing, identifying and quarantining people in containment zones, doorstep delivery of essential items and door-to-door chec-king of people in those areas.

@CMODelhi

How containment takes place

Operation S.H.I.E.L.D.

दिल्ली सरकार
आप की सरकार
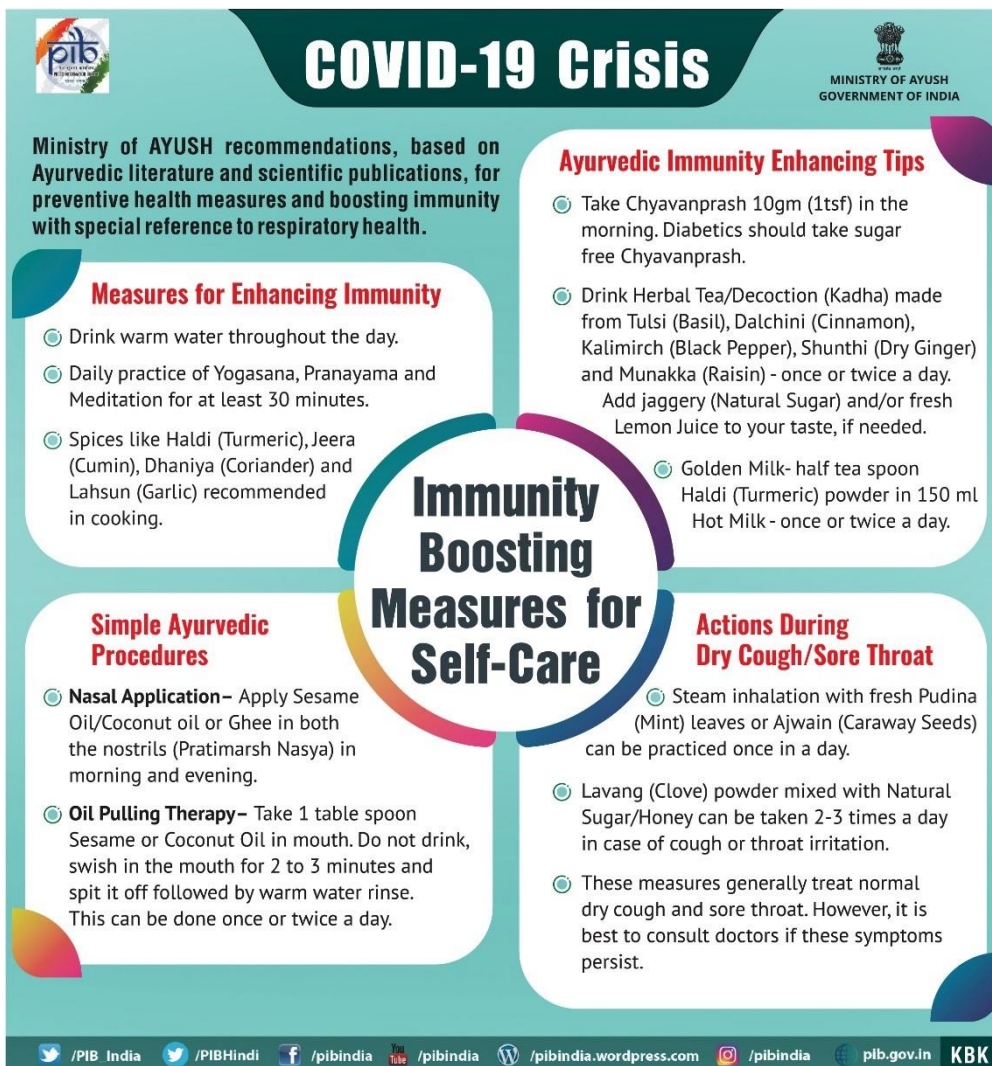
S Sealing of the immediate area or surroundings after geographical marking

H Home quarantine of all the people living in the area

I Isolation and Tracing of people who have been first and second contacts

E Essential Supply of commodities is ensured

L Local Sanitisation of the area by authorities

D Door 2 Door health checks of everyone living in the area

13. AYUSH Reiterates Immunity Boosting Measures

Why in News?

- In the wake of the COVID 19 outbreak, entire mankind across the globe is suffering. Enhancing the body's natural defence system (immunity) plays an important role in maintaining optimum health.

- We all know that prevention is better than cure. While there is no medicine for COVID-19 as of now, it will be good to take preventive measures which boost our immunity in these times.

- Ayurveda's extensive knowledge base on preventive care, derives from the concepts of "Dinacharya" – daily regimes and "Ritucharya" – seasonal regimes to maintain a healthy life.

14. Robust Digital Infrastructure Enabling Prompt Transfer of Cash Payment

Why in News?

- A digital pipeline has been laid to provide the necessary backbone for DBT flows, adoption of social security/pension schemes, etc. under the Pradhan Mantri Garib Kalyan Package.

Highlights:

- A digital pipeline has been established through linking of Jan-Dhan accounts as well as other accounts with the account holders' mobile numbers and Aadhaar [Jan Dhan-Aadhaar-Mobile (JAM)].
- Jan Dhan Yojana (PMJDY) was launched in August, 2014 with an aim to provide bank accounts to unbanked persons.
- Out of around 126 crore operative current accounts saving accounts (CASA), more than 38 crores have been opened under PMJDY.

Purpose of Creating Digital Infrastructure:

- Enablement of interoperable, speedy and accurate transactions:
- The bank accounts are enabled to carry out both cash and digital transactions at bank branches, Business Correspondent (BC) points, merchant locations and on the internet.
- Using biometric ID, highly cost-effective payments solutions like AePS/ Bhim Aadhaar Pay have been created both for banking services and for retail payments.

The Digital Payment Ecosystem includes the Following Modes:

- **Aadhar enabled payment system (AePS):** helps in cash withdrawal by using Aadhaar authentication at branch/BC locations.
- **Bhim Aadhaar Pay:** enables payment to merchants using Aadhaar authentication
- **RuPay Debit Cards:** As on 31 March 2020, a total of 60.4crore RuPay cards have been issued including 29 crore issued in PMJDY accounts. These cards could be used at ATMs for cash withdrawal and at Points of Sale (PoS)& e-commerce for digital payments.
- **Unified Payment Interface (UPI):** Immediate real time payment system which helps in both person to person (P2P) and Person to Merchant (P2M) transactions.
- **Bharat Bill Payment System (BBPS):** helps in payment of utility bills through internet & BC locations both by using cash & Digital Modes.

- According to the Union Finance Ministry, using the digital payment infrastructure mentioned above, more than 30 crore poor people have received financial assistance of Rs 28,256 crore under the Pradhan Mantri Garib Kalyan Package, in order to protect them from the impact of the lockdown due to COVID 19.

15. Success of a local shutdown: Agra Model

Why in News?

- The Centre showcased the Agra model at the daily COVID-19 briefing, and it is also being shared with other states as best practice.

Agra Model:

- Nearly 259 team were set up for screening purpose which covered about 100 homes per day; doctors sat at a nearby civil dispensary, and people who showed symptoms could visit them.

- Hotspot area was identified within radius of 3-km from the epicentre while a 5 km buffer zone was identified as the containment zone.

- Agra covered 1.63 lakh households in a few days, took about 1000 samples. A security guard was roped in to supply daily needs to the families.

CLUSTER CONTAINMENT PLAN
Geographical distribution and Micro-planning (3 km Radius from epicenter)

3km: Total area identified within radius of 3 kmfrom the epicentre on March 2	**15:** Urban primary health centres included in containment area for epicenter	**9.3 lakh:** number of citizens affected in epicentre	**1.6 lakh:** number of households screened	**1248:** total teams Deployed. Each team had 2 workers including auxiliary nurse midwife

COVID WAR-ROOM
- Integrated Control & Command Centre (ICCC) of Agra Smart City, built under Smart City Mission, converted into COVID War Room for Agra District
- Central Help Lines set up for the district
- Multifunctional District teams setup for centralised and coordinated response management

ISOLATION AND MEDICAL FACILITY SET-UP AND CLUSTER CONTAINMENT
- Active public private partnership for setting up testing and treatment facilities
- Inspection by district magistrate and city official
- Identification of critical hot spots and clusters
- Active survey and containment in hotspots

DOORSTEP DISTRIBUTION CHAIN
- Identification of local providers of food and medical supplies in every ward
- Set up of distribution chain for doorstep delivery
- E-Pass facility started to facilitate movement of essential goods and services during lockdown

CITIZEN SELF REGISTRY PLATFORM
City Self Registry Platform: Scalable and secure SaaS platform response by PIN Code; city safety messaging included

App shared with citizens: app link shared via social media linked to agra smart city website, no need to download to respond

Immediate Info to Citizens: gives risk rating to citizen; gives risk related recommendation; health helpline details shared

Citizen response: View responses, medium & high risk people called, supported by centralized team

- They utilise their existing Smart City Integrated with Command and Control Centre (ICCC) as war rooms.

- Under the cluster containment and outbreak containment plans, Agra identified epicentres, delineated impact of positive confirmed cases on the map and deployed a special task force as per the micro-plan made by the district administration.

- In these containment zones, urban primary health centres were roped in with 1,248 teams including ANMs/ASHA/AWW, reaching out to 9.3 lakh people through household screening.

- Agra was also the earliest reference to community transmission in an official statement.

Pathanamthitta (Kerala) Model:

- As a first step, Pathanamthitta district of Kerala sealed its borders. Unlike other parts of the country where only persons with travel history from abroad were being screened, it decided to do so for all entering the district, from overseas, other states or even districts, creating a database of the same. Details of those who entered the district from abroad and across the country since January were added to the database.

- In a first, it also decided to prepare route maps of the positive cases. A flow chart was publicised to help people see if they had been present at a stated travel path at a particular time.

- It launched a call centre from where enquiries were made twice daily to those under quarantine, regarding medical and non-medical requirements. A group of engineering students designed a 'Corona RM' app, where the call centre counsellors would upload requirements of those under home quarantine.

- It then put in place geo-mapping of those under observation. With limited kits, they could test only 200 samples a day. So they chose categories like international travellers, inter-state travellers, health workers, migrant workers, senior citizens under observation etc.

Bhilwara Model:

- Rajasthan's Bhilwara was one of the early hotspots for COVID-19.

- The city was completely isolated with Section 144 CRPC being imposed.

- In the first phase, essential services were allowed; in the second phase, there was a total shutdown with the city and district borders sealed and check posts set up at every entry and exit point. All trains, buses and cars were stopped.

- The District Magistrates of neighbouring districts too were asked to seal their borders. The containment zone is usually 3 km around the epicentre, and the buffer zone is 7 km.

- The containment and buffer zones were turned into 'No-Movement' zones and cluster mapping were done for COVID-19 cases.

- Through this, six areas were identified and special teams were deployed for continuous screening of suspected cases. The containment and buffer zones, all ambulances and police vehicles, the screening centre and quarantine centres, the Collectorate, Police Line and other public-dealing offices were disinfected on a daily basis.

16. YUKTI - Young India Combating COVID with Knowledge, Technology and Innovation

Why in News?

- Recently, Union Ministry for Human Resource and Development (HRD)has launched a web-portal YUKTI (Young India Combating COVID with Knowledge, Technology and Innovation) in New Delhi.

YUKTI Web Portal:

- It's a unique portal and dashboard to monitor and record the efforts and initiatives of MHRD.
- The portal intends to cover the different dimensions of COVID-19 challenges in a very holistic and comprehensive way.
- It will cover the various initiatives and efforts of the institutions in academics, research especially related to CoVID, social initiatives by institutions and the measures taken for the betterment of the total wellbeing of the students.
- The portal will cover both qualitative and quantitative parameters for effective delivery of services to the academic community at large.
- 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 give inputs for better planning and will enable MHRD to monitor effectively its activities for the coming six months.
- The portal will also establish a two-way communication channel between the Ministry of HRD and the institutions so that the Ministry can provide the necessary support system to the institutions. The portal will help in critical issues related to student promotion policies, placements related challenges and physical and mental well-being of students in these challenging times.

Significance:

- In these difficult times, the portal is an effort of the HRD Ministry to achieve the goals of
  - ✓ keeping our academic community healthy, both physically & mentally and
  - ✓ enable a continuous high-quality learning environment for learners.
- The web platform Yukti aims to epitomize its name and prove to be a great enabler in taking the research to the ultimate stakeholders, the citizens of India.

17. National Human Rights Commission (NHRC)

Why in News?

- The National Human Rights Commission (NHRC) asked the Union Ministry of Home Affairs to address the concerns of the mentally ill people on the streets during the lockdown to check the spread of the novel coronavirus.
- The Protection of Human Rights Act, 1993 defines Human Rights as the rights relating to life, liberty, equality and dignity of the individual guaranteed by the Constitution or embodied in the International Covenants and enforceable by courts in India.

Highlights:

- The National Human Rights Commission (NHRC) of India is an autonomous public body constituted in 1993.
- It was given a statutory basis by the Protection of Human Rights Act, 1993 (PHRA).
- It is in conformity with the Paris Principles, adopted at the first international workshop on national institutions for the promotion and protection of human rights held in Paris in October 1991, and endorsed by the General Assembly of the United Nations.
- Recommendations given by NHRC are just advisory and not binding in nature.
- Apart from enquiry into complaints of violation of human rights or negligence in the prevention of such violation by a public servant, the Commission also studies treaties and international instruments on human rights and make recommendations to the Government.

Composition:

- **The NHRC (National Human Rights Commission) consists of:**
  - ✓ A Chairperson, retired Chief Justice of India
  - ✓ One Member who is, or has been, a Judge of the Supreme Court of India
  - ✓ One Member who is, or has been, the Chief Justice of a High Court
  - ✓ Two Members to be appointed from among persons having knowledge of, or practical experience in, matters relating to human rights
  - ✓ In addition, the Chairpersons of four National Commissions of
    (1. Minorities 2. SC and ST 3. Women) serve as ex officio members.

18. NRLM Self Help Group

Why in News?

- The motivated, Enthusiastic and Committed Women Members of Self-Help Groups (SHGs) across the country formed under the Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM) is contributing in addressing COVID-19 outbreak in India.

Highlights:

- These women are engaged in livelihoods activities, bringing social change through awareness generation, leading movements and responding during natural calamities.

- During the on-going crisis, SHG members have emerged as community warriors by contributing in every possible way to contain the spread of COVID-19.

- The SHG network across the country was made aware of the various aspects of the disease (personal hygiene, social distancing etc.) through Audio Visual (AV) IEC material and advisories developed by the Health Ministry which were circulated to all State Rural Livelihoods Missions (SRLMs).

- In Tamil Nadu, two volunteers of SHGs are assigned to each PDS shop. They are provided gloves, masks and sanitisers and they ensure that people in the queue maintain adequate distance.

- **Some more Important Interventions by Various SRLMs are Mentioned here:**
  - ✓ JEEViKA, Bihar stepped in and started working on IEC materials that would help in awareness and preparedness for the outbreak.
  - ✓ **Rangolis for Awareness:** SHG women from UP SRLM 'Prerna' have used their creativity to make rangolis and mark lines and circles to re-emphasise the need for 'social distancing'. They have also been making wall paintings to spread key messages about COVID prevention in their communities.
  - ✓ **Didi Helpline:** The Didi helpline, a telephonic helpline initiated by Jharkhand SRLM, is open 24 hours to help migrant labourers by providing them verified information. It enables them to provide their data to state authorities to help evacuate them from different states, back to Jharkhand. Efforts to dispel fake news: Notable efforts have been made by women of Kudumbashree in Kerala, to help dispel the widespread fake news that causes panic. Through its network of WhatsApp groups, Kudumbasree is trying to propagate only the right information to the community.

- ✓ These platforms are used specifically to disseminate immediate, authentic information and updates on the outbreak and precautionary measures.
- Through many similar responsible collective actions organized across the nation, marginalised and vulnerable women of these communities have played a significant role in the war against Coronavirus while being empowered both socially and economically.

19. CM Fund Contributions to not Qualify as CSR Spend

Why in News?

- The Ministry of Commerce has clarified that the contributions to the Chief Minister's Relief Fund or the State relief fund will not qualify as Corporate Social Responsibility (CSR) expenditure, while any donation to the PM CARES Fund will.

Highlights:

- Ministry of Commerce also said that Ex-gratia payments made to temporary, casual and daily wage workers by companies will be considered as CSR expenditure under the companies law, provided that such payments are over and above disbursement of wages.
- Under the Companies Act, 2013, certain classes of profitable entities are required to spend at least 2 % of their three-year average annual net profit towards Corporate Social Responsibility (CSR) activities.

Schedule VII of the Companies Act, 2013:

- The Chief Minister's Relief Fund' or 'State Relief Fund for COVID-19' is not included in Schedule VII of the Companies Act, 2013, and therefore any contribution to such funds shall not qualify as admissible CSR expenditure.
- Schedule VII shows activities which may be included by companies in their Corporate Social Responsibility Policies Activities relating to:
  - ✓ Eradicating hunger, poverty and malnutrition, and sanitation and making available safe drinking water.
  - ✓ Promoting education, including special education and employment enhancing vocation skills especially among children, women, elderly and the differently abled and livelihood enhancement projects.
  - ✓ Promoting gender equality, empowering women; setting up old age homes, day care centres and such other facilities for senior citizens.

- ✓ Ensuring environmental sustainability, protection of flora and fauna, animal welfare, agroforestry, conservation of natural resources and maintaining quality of soil, air and water [including contribution to the Clean Ganga Fund]

- ✓ Historical importance and works of art; setting up public libraries; promotion and development of traditional art and handicrafts;

- ✓ Measures for the benefit of armed forces veterans, war widows and their dependents;

- ✓ Training to promote rural sports, nationally recognised sports, Paralympic sports and Olympic sports

- ✓ Contribution to the prime minister's national relief fund or any other fund set up by the central govt. for socio economic development and relief and welfare of the schedule caste, tribes, other backward classes, minorities and women;

- ✓ Contribution to incubators funded by Central/state Government or any agency or PSU, and contributions to public funded Universities, Indian Institute of Technology (IITs), National Laboratories and Autonomous Bodies engaged in conducting research in science, technology, engineering and medicine aimed at promoting Sustainable Development Goals (SDGs)

- ✓ Rural development projects;

- ✓ Slum area development;

- ✓ Disaster Management, Including relief, Rehabilitation and Reconstruction Activities.

20. COVID-19 can Help Deal with the Silent Tuberculosis Crisis

Why in News?

- According to a WHO Information Note — 'Tuberculosis and COVID-19', there is a need to maintain TB services during effective response to COVID-19.

- It is important that the progress made in TB prevention and care is not reversed by the COVID19 pandemic.

Highlights:

- It said that TB patients who have lung damage or chronic obstructive pulmonary disease may suffer from more severe illness if they are infected with COVID-19.

- Doctors claim that people suffering from TB and COVID-19 may have poorer treatment outcomes, especially if TB treatment is interrupted.

Significance for India:

- India accounts for 27 per cent of the world's total TB patients and is among the top 8 countries with the highest number of TB cases.

- In 2018, as many as 4.4 lakh people died of TB in India which is 29 per cent of the total 1.5 million deaths due to TB in the world.

- Out of total 7 million cases reported in 2018 across the world, India had 2.69 million cases, while, according to data available, it missed out on tracking down 5.40 lakh cases.

- There is a stronger case for concurrent testing for both conditions in individuals even if the clinical picture is atypical. The pandemic can help trace 5.4 lakh missed out T.B patients as fear of Coronavirus will induce them for testing as symptoms for TB – fever, cough and difficulty in breathing — are almost similar to coronavirus.

- The current situation will also help identify people with latent TB – who have the disease but no symptoms. According to WHO, there are 25 percent of patients with latent TB.

Tuberculosis(TB):

- TB remains the world's deadliest infectious killer.

- Each day, over 4000 people lose their lives to TB and close to 30,000 people fall ill with this preventable and curable disease.

- Caused by the bacillus Mycobacterium tuberculosis, TB is an infectious disease.

- In most cases, TB affects the lungs (pulmonary TB) but can also affect other sites(non-pulmonary TB).

- Latent tuberculosis infection (LTBI) is a state of persistent immune response to stimulation by Mycobacterium tuberculosis antigens without evidence of clinically manifested active TB. Someone has latent TB if they are infected with the TB bacteria but do not have signs of active TB disease and do not feel ill.

- It is a contagion disease, which spreads when the people who are sick with pulmonary TB expel bacteria into the air, for example by coughing.

- Rapid molecular test, Sputum smear microscopy, Culture-based methods are some of the diagnostic tests for TB. Without treatment, the mortality rate from TB is high.

Initiatives for TB in India:

- There is free treatment of TB in India.

- India aims to eliminate TB by 2025 under its National Strategic Plan, while the UN aims to eliminate TB by 2030. It is driven by the DETECT-TREAT-PREVENT-BUILD approach.

- The focus is on early diagnosis of all the TB patients,
- prompt treatment with the right drugs and regimens along with suitable patient support systems including financial and nutritional support.
- This is supplemented by prevention strategies including active case finding, contact tracing and LTBI management in high risk populations, and airborne infection control.
- Mass BCG (bacillus Calmette-Guerin) vaccination to prevent TB.
- Revised National TB Control Programme (RNTCP) was launched in 1993, offering free diagnosis and treatment for patients, rescuing them from otherwise sure death.
- A Rs 12,000 cr allocation of fund over the next 3 years to fight TB.
- A public campaign: TB Harega Desh Jeetega.

WORLD PRESS FREEDOM INDEX

INDIA SLIPS TWO PLACES

India made its debut on this index in 2013 at 140 out of 180 nations. The rankings gradually improved, reaching 136 in 2017. However, it has since slipped back to 140 this time. South Asia, in general, features poorly on the index, with Pakistan dropping three places to 142, and Bangladesh dropping four places to 150

Situation
- Good
- Satisfactory
- Noticeable
- Difficult
- Very serious
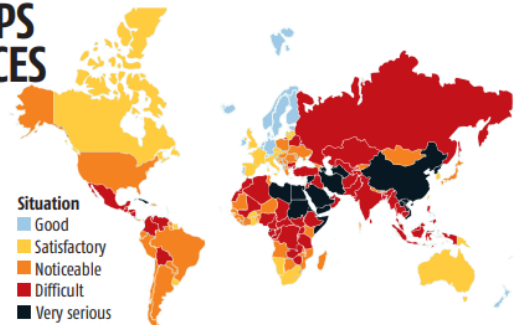
Rank	Countries	Score	Rank	Countries	Score
1	Norway	7.82	10	Costa Rica	12.24
2	Finland	7.90	33	UK	22.23
3	Sweden	8.31	48	USA	25.69
4	Netherlands	8.63	106	Nepal	33.40
5	Denmark	9.87	140	India	45.67
6	Switzerland	10.52	142	Pakistan	45.83
7	New Zealand	10.75	149	Russia	50.31
8	Jamaica	11.13	150	Bangladesh	50.74
9	Belgium	12.07	177	China	78.92

21. World Press Freedom Index, 2020

Why in News?

- India has dropped two places on a global press freedom index to be ranked 142nd out of 180 countries in the annual World Press Freedom Report.

Highlights:

- The report said that with no murders of journalists in India in 2019, as against six in 2018.
- However, there have been constant press freedom violations, including police violence against journalists, ambushes by political activists, and reprisals instigated by criminal groups or corrupt local officials.

World Press Freedom Index:

- The Press Freedom Index is an annual ranking of countries compiled and published by Reporters Without Borders.

- It is based upon the organization's own assessment of the countries' press freedom records.
- It intends to reflect the degree of freedom that journalists, news organisations, and netizens have in each country, and the efforts made by authorities to respect this freedom.
- The report is partly based on a questionnaire which asks questions about pluralism media independence, environment and self-censorship, legislative framework, transparency, and infrastructure.

Global Scenario:

- Norway is ranked first in the Index for the fourth year running.
- India ranked better than its neighbours Pakistan (145) and Bangladesh (151), but worse than Sri Lanka (127) and Nepal (112).
- China at 177th position is just three places above North Korea, which is at 180th.

Various Threats to Press Freedom:

- Across the world, press freedom is under pressure from aggressive authoritarian regimes.
- The media is also facing a technological crisis, due to a lack of democratic guarantees and a democratic crisis following polarization and repressive policies, the report reads.
- In addition comes a crisis of trust following growing suspicion and even hatred of the media, and an economic crisis and impoverishing of quality journalism.
- Among other issues, the report has listed coordinated social media hate campaigns against journalists reporting on issues that "annoy right-wing followers", criminal prosecutions to gag journalists critical of authorities and police violence against journalists.

22. Technology Development Board (TDB)

Why in News?

- TDB approves support for indigenous company for ramping up production of COVID-19 diagnostic kits.
- TDB invited applications from Indian companies and enterprises to strengthen the nation's core capacities in surveillance, infection prevention, control, laboratory support, and in particular, the preparedness in terms of isolation and ventilator management of critically-ill patients for containing and preventing the spread of COVID-9 in March 2020.

Highlights:

- The Technology Development Board (TDB), a statutory body of the Department of Science and Technology (DST), has approved financial support to MyLab Discovery Solutions, Pune, for ramping up production of COVID-19 diagnostic kits they have developed.

- The company has submitted an application in response to its invitation for proposals for technologically innovative solutions towards fighting COVID-19.

- Mylab Discovery Solutions is the first indigenous company to develop real-time PCR based molecular diagnostic kit that screens and detects COVID-19 from samples of people who display flu-like symptoms. With support from TDB, they will ramp up production of the kits through automation of the facility from current manual process, thereby increasing its current capacity from 30000 tests per day to one lakh test per day.

- The company is expected to complete the automation within the next few months.

- This kit has been approved by ICMR and CDSCO. The kit will be deployed in a very short time, considering the National Emergency.

23. SVAMITVA Scheme

Why in News?

- The Union Minister of Rural Development & Panchayati Raj issued guidelines regarding the SVAMITVA scheme, a new initiative of the Ministry of Panchayati Raj.

Highlights:

- SVAMITVA scheme, a collaborative effort of the Ministry of Panchayati Raj, State Panchayati Raj Departments, State Revenue Departments and Survey of India, aims to provide an integrated property validation solution for rural India, engaging the latest Drone Surveying technology, for demarcating the inhabited land in rural areas.

- The program is currently being implemented in six states – Haryana, Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh and Uttarakhand.

- Under this, mapping of rural housing land can be done using the latest survey methods and drones.

- This scheme will help in streamlining planning and revenue collection in rural areas and ensuring clarity on property rights.

- The scheme will also enable the creation of better-quality Gram Panchayat Development Plans Engaging Drone Surveying technology.

- The aim of this scheme is to provide people in the rural areas with the right to document their residential properties so that they can use their property for economic purposes.

24. Jal Shakti Abhiyan

Why in News?

- Jal Shakti Abhiyan gears up for monsoon.

Jal Shakti Abhiyan:

- The scheme was launched in 2019 and it covered 256 water stressed districts across the country.
- This 'Abhiyan' is a mass movement to bring all the stakeholders under one ambit of water conservation drive.
- Under this Abhiyan, more than six and a half crore people became part comprising of State Govts, Central Govt, Civil Society Organisations, Panchayati Raj Institutions and Communities. More than seventy-five lakh traditional and other water bodies and tanks were renovated and around a crore water conservation & rainwater harvesting structures were created.
- **Focus Areas of the Jal Shakti Abhiyan:**
  - ✓ Water conservation and rainwater harvesting
  - ✓ Renovation of traditional and other water bodies
  - ✓ Reuse of water and recharging of structures
  - ✓ Watershed development
  - ✓ Intensive Afforestation

3. SCIENCE & TECHNOLOGY

1. COVID-19 outbreak: What Does It Take to Build A Ventilator

Why in News?

- As India faces the danger of community spread of the novel coronavirus and a spike in hospital admissions, the government is seeking to ramp up its capacity of ventilators.

Highlights:

- As a large number of ventilators may be required soon, the Railways-owned Integral Coach Factory (ICF) has made an attempt to reverse engineer the machines.
- Private sector carmakers with no experience in this line too, have also shown an interest to build the machines.

Ventilators:

- Ventilators (or respirators) are mechanical devices that help a patient breathe when they are unable to do so on their own.
- Hospitals have a supply system for gases like oxygen, which are used in ventilators.
- The ventilator takes the compressed gas (oxygen) and mixes it with other gases (because typically what we breathe is 21% oxygen from the atmosphere).
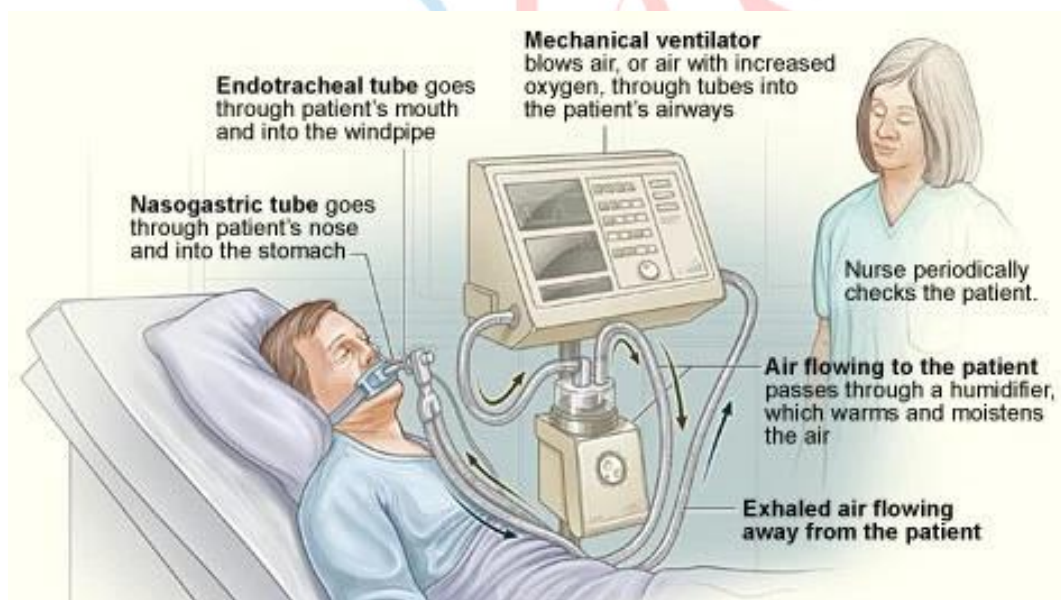
- It allows you to artificially push in a certain required amount of oxygen into the patient's lungs and allows them to deflate.

Importance of Ventilators in the outbreak:

- The COVID-19 patient sometimes has Interstitial Pneumonia.

- In this disease, the virus causes inflammation in the air passages inside the lungs called bronchioles, causing inflammation in this area and in the alveoli (the tiny sacs that the air is delivered to).

- Any inflammation restricts air going inside the lungs. As the space for the exchange of air in the lungs decreases, the patient has to work harder to breathe, which may not be possible indefinitely.

- Role of ventilators: As patients can't breath at rates of 40-45 (breaths) a minute and expect to sustain life, a ventilator allows one to rest the patient's lungs by giving them oxygen at higher rates. Ventilators allow the patient time to heal on their own by supporting a system that would have otherwise failed.

Does India have Enough Ventilators?

- As of now, India's state hospitals together have 14,220 ICU ventilators.

- Additionally, government (and some private) hospitals dedicated for the management of COVID-19 patients have about 6,000 ventilators.

- According to recent mathematical modelling by scientists of the Indian Council of Medical Research (ICMR), around half of those infected and in intensive care would require mechanical ventilation.

- Think tank Brookings India has estimated that India could, in the worst case, need between 1 lakh and 2.2 lakh ventilators by May 15.

How to Build a ventilator?

- Different types of ventilators deliver air in different modes.

- To make a ventilator, one has to have core knowledge of the clinical aspects of the ventilator and the requirements of the doctors using them.

- These requirements have to then be converted into engineering components that can achieve the required outputs.

- Ventilators are a combination of technologies - not only software and electronics, but also pneumatics, as they handle gases.

- They are also required to adhere to safety standards, and include a mechanism to minimise the risk to the patient in the event the device malfunctions.

Classification of ventilators:

- Based on the mechanism used to deliver the air (flow-delivery mechanism), there are three major classifications for ventilators:

- ✓ External compressed air driven ventilators: A pneumatic (operated by air or gas under pressure) external compressed air-driven ventilator in an ICU setting would be ideal for COVID-19 patients.
- ✓ Turbine ventilators: Turbine ventilators, although less effective, are the next best option - they have fewer components, and it would probably be easier to scale them up.
- ✓ Bellow-driven or piston ventilators.
- A COVID-19 patient's lungs are relatively stiff and the air passages are swollen. Hence, low-flow gas will not help and one would need higher pressure and high flow.

Where the Problem Lies?

- Only 10% domestic manufacturing: According to industry sources, only about 10% of ventilators in use in India are manufactured in the country.
- The pandemic has affected global supply chains, even as demand has surged everywhere.
- With imports slowing, an increased burden now lies on Indian manufacturers, who have limited capacity to scale up production. Data from Indian manufacturers project their total monthly capacity to touch around 6,000 ventilators in a month from now. Question of raw material: At least 40% of a ventilator's physical components are imported from countries like the US, China, France, and Germany. These include several crucial components like sensors and displays. Failure of the government: In a usual situation, the government has an epidemic and disaster management cell, which is supposed to store ventilators in 'live' mode, running and monitored. Indian government has not done this.

Scaling up Domestic Manufacture of Ventilators:

- **Public sector:**
  - ✓ Bharat Electronics Ltd (BEL), a PSU under the Ministry of Defence, is in the process of manufacturing 30,000 ventilators.
  - ✓ Health Ministry PSU HLL Lifecare Ltd has floated a tender for 20,000.
  - ✓ ICF Chennai, maker of Train 18, is attempting to manufacture ventilators.
- **In the private sector:**
  - ✓ Mahindra & Mahindra to simplify the design of ventilators, and could start a collaboration with Tata, too. Simplifying the design would help overcome hurdles like sourcing imported components.
  - ✓ Maruti Suzuki India has announced an arrangement with Noida-based AgVa Healthcare to rapidly scale up production to 10,000 per month.

2. COVID-19 virus: Three types of quasi sub-species of circulation in India

Why in News?

- A mixture of three quasi-subspecies of SARS-CoV-2 is in circulation in India, according to the Indian Council of Medical Research (ICMR).

Highlights:

- These imported variants showed no differences from how they behaved in the place of origin.
- Scientists are yet to classify a SARS-Cov-2 variant as an Indian strain.
- India's COVID-19 cases were mainly from people with travel history and their immediate contacts, which is to say that this virus was brought in from outside.
- There is no variation from what is being seen on how this strain is behaving around the world. So, there is no difference in its severity.
- The progression in terms of cases could not be compared with any other country as of now and people should be looking at the risk of exposure and adherence to physical distancing.
- A 'strain' is a sub-type of a virus, characterised by different cell surface proteins, eliciting a different immune response from other strains.
- A mutation, however, is very minor genetic errors in genome sequences made during replication that doesn't fundamentally change the nature or behaviour of the virus.
- The novel coronavirus's genome is made up of 30,000 base pairs, while a human genome contains over 3 billion. The small numbers make it easy for scientists to track changes and new lineages as they evolve. If a virus mutates too fast, vaccines being developed now will potentially become useless, and pharmaceuticals will have to constantly keep up with the mutations by developing new vaccines all the time, a financially unviable prospect.

3. How Bats carry Viruses but don't Fall ill Themselves

Why in News?

- As the novel coronavirus has spread across continents, studies are underway to better understand its origin and how it is transmitted.

Highlights:

- Diseases caused by coronaviruses, such as COVID-19, are zoonotic, meaning they are transmitted between animals and people.

- The global SARS outbreak of 2002-2004, which claimed almost 800 lives in more than two dozen countries, was also traced to the horseshoe variety of bats in 2017.
- According to the World Health Organisation (WHO), SARS-CoV was transmitted to humans from civet cats, and MERS-CoV from dromedary camels. Both the viruses, however, are believed to have originated from bats and subsequently passed on to other animals.

- While researchers are yet to conclude how the novel coronavirus (first detected in China's Wuhan) originated, many believe it could be traced back to bats.
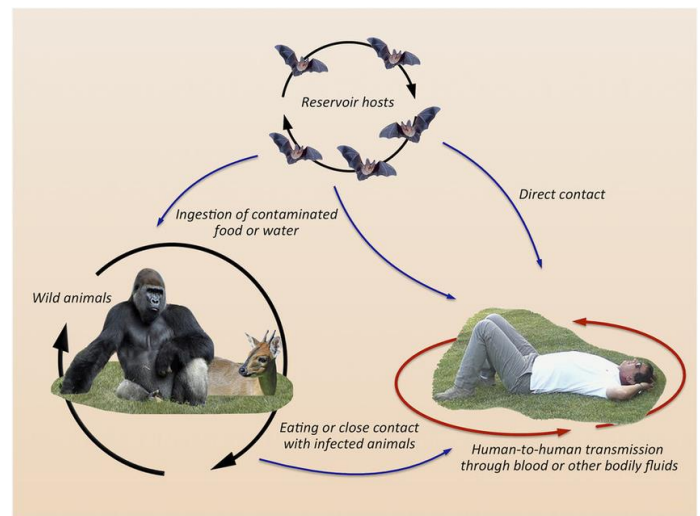
Bats Natural Zoonotic Reservoir:

- Many studies over the years have found bats to be a natural reservoir for a large number of zoonotic viruses that have caused outbreaks in many countries in the past. These include rabies, Marburg, Nipah and Hendra viruses.
- Researchers at the Wuhan Institute of Virology in China were able to trace the origin of the SARS virus to these bats in a remote cave in the country's southeastern Yunnan province.
- After years of investigating caves in several parts of China, the virologists were able to find a single population of horseshoe bats that had the virus strains which matched the ones which had been transmitted to humans.
- Some experts believe that the novel coronavirus could also be traced to horseshoe bats.

Reasons behind Bats Surviving Despite Being carriers of Viruses Themselves

- Bats are able to carry a host of viruses without becoming ill, except for rabies, which affects them.
- Research suggests that bats, which make up a quarter of all mammal species, have developed stronger immune systems through the process of evolution which enabled them to fly.
- Studies have shown that when bats fly, the energy requirements in their bodies cause cells to break down into bits of DNA which are then released. While most organisms would treat such DNA particles as foreign invading bodies, in bats such responses are more muted.

- Due to this weakened response, bats do not develop inflammations, which can cause a considerable toll on the body's energy.
- This phenomenon is believed to be the reason so many viruses can exist in their bodies.

Observations by American Society of Microbiology:

- Coronaviruses are well known to undergo genetic recombination, which may lead to new genotypes and outbreaks.
- The presence of a large reservoir of SARS-CoV-like viruses in horseshoe bats, together with the culture of eating exotic mammals in southern China, is a dangerous combination.
- The possibility of the re-emergence of SARS and other novel viruses from animals or laboratories and therefore the need for preparedness should not be ignored.

4. Hybrid Reactor that Turns CO2 into Useful Molecules

Why in News?

- Researchers have been working on a hybrid system that creates the building blocks for organic molecules by capturing the energy of sunlight. And this system works by combining bacteria and nanowires.

Highlights:

- We can't ship packages between Mars and Earth back on forth: one, that would be extremely expensive; two, it is not sustainable. So it is necessary for us to have a plan to produce most items locally.
- Nanowires are incredibly thin silicon wires that are about a hundredth of the width of a human hair. They are used as electronic components, sensors, and solar cells.
- In order to work it, we only need sunlight and water, which Mars has plenty on its vast surfaces in frozen form. The left side of the reactor is the chamber which contains the nanowire-bacteria hybrid that reduces CO_2 to form acetate. Oxygen is produced on the right side. The team first demonstrated the nanowire-bacteria hybrid reactor five years ago; however, the solar conversion efficiency was only about 0.4%.
- Top efficiency is achieved by operating at the optimal acidity for bacteria, which gave more efficient conversion of solar energy to carbon bonds.
- The silicon nanowires are essentially like an antenna: They capture the solar photon just like a solar panel. Within these silicon nanowires, they will generate electrons and feed them to these bacteria. Then the bacteria absorb CO_2, and spit out acetate.

- The biohybrid can pull carbon dioxide from the air on Earth to make organic compounds. We can almost think of this as planting new trees. While producing energy, it helps with climate change too. It brings a good deal for everyone involved.

5. NASA's Mars Helicopter - Perseverance Program

Why in News?

- NASA's Mars Helicopter, which will be attached to NASA's Mars Rover named Perseverance during the mission, has successfully completed its testing stages.
- It will be the first aircraft to be flown on any other planet in human history.

Highlights:

- With NASA eyeing Mars as the first habitable planet for humans after Earth, its Mars 2020 mission to reach its surface and establish a human base there is in full swing.
- The testing phase marked the last time that the rotors of the helicopter have been operated on Earth and the next flight to be taken by the helicopter will be straight on Mars.
- NASA has used a twin-rotor mechanism to make it fly. The helicopter derives its energy from the sun through solar panels.
- Once on Mars, the helicopter will remain encapsulated until the mission managers determine an acceptable area to conduct test flights. The Mars helicopter comes as a part of a larger initiative in the shape of a rover named Perseverance.

Perseverance Program:

- Perseverance is supposed to take-off for Mars in the middle of July onboard a United Launch Alliance Atlas V 541 rocket next year. It will then land on the red planet on February 18, 2021. NASA's Mars Exploration Program is aimed at looking for signs of any microbial life on the planet as well as characterizing the planet's climate and geology.
- The knowledge garnered through this will eventually help in any future human establishments on Mars.
- Perseverance carries a special commemorative plate that holds small silicon chips bearing the names of more than 10.9 million people who participated in NASA's "Send Your Name to Mars" campaign.
- Perseverance will have other duties as well. Chief among them will be to collect and cache samples for a future return to Earth, where scientists will be able to analyse them in detail in well-equipped labs.

6. Study lists 69 Existing Drugs that can Target Coronavirus

Why in News?

- Nearly a hundred scientists from across the globe worked together to study the genes of the coronavirus (SARS-CoV-2) and have published a list of drugs that can be re-purposed to treat COVID-19. They have also mapped out the human proteins that interact with those of the virus.

- The proteins of the virus must attach to the human proteins to cause the infection. The team studied 26 coronavirus genes that help in the production of these proteins.

Highlights:

- They studied human proteins and found 332 SARS-CoV-2 and human protein interactions. The team then listed 67 human proteins that can be targeted by 69 drugs to fight the infection. These drugs include the existing FDA-approved drugs, drugs under clinical trials and/or preclinical compounds. When the virus invades the cells, it hijacks the cells' molecular machinery to replicate itself because it cannot do this on its own.

- The drugs that have been identified may be able to inhibit these molecular machines so that the virus can no longer use them for its own survival.

- Some of these drugs will be able to decrease viral load and disease severity for patients. However, they still need to be further tested.

7. Transmission of COVID-19 from Mother to Child

Why in News?

- It is still unclear whether a pregnant woman runs the risk of transmitting the virus to her baby during pregnancy. While there is no concrete evidence for vertical transmission of SARS-CoV2 from mother to foetus, it is known that pregnancy involves a risk, after birth, of adverse outcomes from many respiratory viral infections.

Highlights:

- A virus may be transmitted after delivery either from mother during breastfeeding or from the hospital environment.

- The World Health Organization notes that there is no evidence yet to show that pregnant women are more vulnerable or are at a higher risk of severe illness from COVID-19 than the general population.

- Experts have flagged this concern as they cite the recent history of vertical maternal-foetal transmission of such emerging viral infections as the Zika virus, Ebola virus, Marburg virus and other agents.

- Maternal management and foetal safety are a significant concern, but the infection is at a low level and there is not sufficient number of patients for studies to assess the vulnerability of pregnant women and whether there was vertical transmission of COVID-19 virus to their babies.

- So far no reliable evidence recommends any specific COVID-19 treatment for pregnant women. Before allowing drugs for pregnant women, clinical trials would be needed to prove the effectiveness of drugs and the effects on the foetus to establish a standardised treatment.

8. Space mining

Why in News?

- U.S. President Donald Trump has signed an executive order that supports the exploration and the use of space resources by the U.S. citizens and businesses.

- The order, titled "Encouraging International Support for the Recovery and Use of Space Resources," gives Americans the the right to engage in the commercial exploration, recovery, and use of resources in outer space.

Highlights:

- This Executive Order establishes U.S. policy toward the recovery and use of space resources, such as water and certain minerals, in order to encourage the commercial development of space.

- According to Trump's executive order, the US will object to any attempt to use international law to hinder its efforts to remove chunks of the moon or, should the opportunity arise, additional mining of Mars and other celestial bodies.

- U.S. policy contradicts the 1979 Moon Treaty, which America has not signed. The treaty says that all non-scientific use of space resources be governed by an international regulatory framework.

- The executive order gives companies operating in space the right to any resources mined there. The U.S. Congress already passed a law in 2015 that allowed individuals as well as companies to use the moon and asteroid for its resources.

- Trump has taken a consistent interest in asserting American power in space, forming the Space Force within the US military last year to conduct space warfare where needed.
- Russia's space agency Roscosmos also released a statement criticizing the move. They said, attempts to expropriate outer space and aggressive plans to de facto seize the territories of other planets will hardly encourage other nations to participate in fruitful cooperation.

9. Filling the Gap: Covid Test

Why in News?

- The nation-wide lockdown that began on March 25 has helped to contain the spread of COVID-19. However, it needs to be asked if India's response to the coronavirus outbreak has any unseen gaps.

Gaps in Controlling COVID-19 Pandemic:

- **Low number of Infectious Disease Specialists:**
  - ✓ These specialists are available in India, but they mostly work in big private hospitals. The Clinical Infectious Diseases Society (CIDS) and the Indian Association of Medical Microbiologists (IAMM) are not known to have proffered any advice to the government.

- **Fulling mandate of National Institute of Biologicals:**
  - ✓ The National Institute of Biologicals (NIB) was established in 1992 by the Ministry of Health to function as the apex body and was mandated to ensure validation of invitro diagnostics, vaccines and biotherapeutics in the event of a pandemic.
  - ✓ The NIB ought to deliver on its mandate and the best infectious diseases professional in the country should be steering it. A search committee of retired virologists, infectious diseases specialists and medical microbiologists should be constituted urgently to find a director for the NIB.

- **Need to conduct antibody test Along with PCR Test:**
  - ✓ Traditionally, there are two types of diagnostic tests for infectious organisms — tests for the presence of the virus itself (current infection), and tests for antibodies to the virus (current or prior infection).

✓ The Polymerase chain reaction (PCR) test used for detecting specific genetic material of a virus is key to determine if someone ill is infected with COVID-19. The WHO recommendations have also added antibody and antigen tests alongside the PCR. This will enable mass screenings — these have to be confirmed by PCR tests.

What are PCR, Anti-body and Anti-gen Tests?

- **PCR Test:**
  - ✓ The PCR test identifies a virus from the swabs taken a few days after infection, to about 8-10 days after the first symptoms appear. It can also provide clues to community transmission, including anticipating the percentage of population that might develop serious complications.
  - ✓ A PCR test takes six to eight hours, not counting the time taken to collect and send the sample to the nearest lab. It is expensive as each test costs around Rs 4,500.
  - ✓ A commercial test named X-pert has recently been approved by the US FDA for detecting the virus' nucleic acid within a couple of hours.
- **Antibody Test:**
  - ✓ The antibody test is the best to calculate the number of people who may have experienced COVID-19. It is dependable for hotspot surveillance; it is quick and helps to see who has been infected more than 10 days earlier.
  - ✓ The only negative aspect of it is that if conducted very early, it may miss virus shedders while hunting for the antibodies.
- **Antigen Test:**
  - ✓ Antigen test identifies the protein component of the virus and could be used even sooner than the antibody test.

10. Biofortified Carrot

Why in News?

- Vallabhhai Vasrambhai Marvaniya, a farmer scientist from Junagadh district, Gujarat developed Madhuban Gajar and is benefitting more than 150 local farmers in the area.

Highlights:

- Madhuban Gajar, a biofortified carrot variety with high β-carotene and iron content developed by a farmer scientist from Junagadh district, Gujarat is benefitting more than 150 local farmers in the area.

- It is being planted in an area of over 200 hectares in Junagadh, and the average yield, which is 40-50 t/ha, has become the main source of income to the local farmers.

- The variety is being cultivated in more than 1000 hectares of land in Gujarat, Maharashtra, Rajasthan, West Bengal, Uttar Pradesh during the last three years.

- The Madhuvan Gajar is a highly nutritious carrot variety developed through the selection method with higher β-carotene content (277.75 mg/kg) and iron content (276.7 mg/kg) dry basis and is used for various value-added products like carrot chips, juices, and pickles.

- Among all the varieties tested, beta-carotene and iron content were found to be superior.

- In trials conducted by the National Innovation Foundation, it was found that the Madhuban Gajar carrot variety possesses a significantly higher root yield (74.2 t/ha) and plant biomass (275 gm per plant). This variety was developed by farmer-scientist Shri Vallabhhai Vasrambhai Marvaniya. During 1943, he found that a local carrot variety was profoundly used for fodder to improve the quality of milk.

- He selectively cultivated this variety and sold this carrot in the market at a good price. Since then, he, along with family, is working for the conservation and development of this cultivar. In the 1950s, he started cultivating this on a large-scale.

- He also started distributing the seeds to other farmers in his village and adjoining areas in the 1970s. During 1985, he started selling the seeds on a large scale.

- Shri Marvaniya was conferred with a National Award by the President of India during the Festival of Innovation (FOIN) – 2017.

- He was also conferred with Padma Shri in the year 2019 for his extraordinary work.

11. Convalescent plasma Therapy

Why in News?

- Kerala has gone a step ahead and won Indian Council of Medical Research's (ICMR) approval for the clinical protocol exploring the feasibility of an experimental therapy, convalescent plasma transfusion, which may be administered to severe COVID-19 patients.

Highlights:

- The expert committee which is guiding the State's containment and mitigation strategies against COVID-19 had recommended exploring the plasma therapy following the report in JAMA [Journal of American Medical Association] of a pilot study done by doctors in China.

- In the early 20th century, convalescent plasma treatment was used during outbreaks of diseases such as measles, mumps and influenza.
- More recently, it was used during the H1N1 influenza pandemic, and again in 2013 during the Ebola outbreak in West Africa. In the case of the latter, two patients survived the disease after treatment.
- Following the Ebola outbreak, the World Health Organization issued guidance for its use in treating the disease, saying the small group it was used on showed "promising results."
- Doctors have transfused the blood of recovered patients into those still sick with the 1918 flu, measles, polio, chickenpox and SARS —to varying degrees of success.

Convalescent Plasma Therapy:

- The therapy seeks to make use of the antibodies developed in the recovered patient against the coronavirus.
- The whole blood or plasma from such people is taken, and the plasma is then injected in critically ill patients so that the antibodies are transferred and boost their fight against the virus.
- A COVID-19 patient usually develops primary immunity against the virus in 10-14 days.
- Therefore, if the plasma is injected at an early stage, it can possibly help fight the virus and prevent severe illness.

How is it Done?

- The process to infuse plasma in a patient can be completed quickly.
- It only requires standard blood collection practices, and extraction of plasma.
- If whole blood is donated (350-450 ml), a blood fractionation process is used to separate the plasma.
- Otherwise, a special machine called aphaeresis machine can be used to extract the plasma directly from the donor.
- While blood is indeed extracted from the donor, the aphaeresis machine separates and extracts the plasma using a plasma kit, and the remaining blood components are returned into the donor's body.

Challenges:

- Despite the potential utility of passive antibody treatments, there have been few concerted efforts to use them as initial therapies against emerging and pandemic infectious threats.

- The absence of large trials certainly contributes to the hesitancy to employ this treatment.
- Also, the most effective formulations (convalescent plasma or hyperimmune globulin, H-Ig) are unknown.
- Convalescent plasma has the advantage that while its antibodies limit viral replication, other plasma components can also exert beneficial effects such as replenishing coagulation factors when given to patients with haemorrhagic fevers such as Ebola.
- On the other hand, individual convalescent plasma units demonstrate donor-dependent variability in antibody specificities and titters. H-Ig preparations, in contrast, contain standardized antibody doses, although fractionation removes IgM, which may be necessary against some viruses.
- Nonetheless, the construction of a strategic stockpile of frozen, pathogen-reduced plasma, collected from Ebola-convalescent patients with well-characterized viral neutralization activities, is one example of how to proceed despite existing unknowns

12. COVID 19 - Reproduction Rate

Why in News?

- While people around the world are currently living under a lockdown due to the COVID-19, researchers are still in the process of understanding the nature of its transmission.

R0 (Reproduction rate):

- It is the rate at which a virus is transmitted.
- It is also called the basic reproduction number, it indicates the average number of people who will contract the virus from a person who has already been infected, in a population that does not have immunity for the said disease.
- **Mathematical representation:**
  - ✓ R0 is the division of the number of new infections by the number of existing infections, or the average number of new infections over an infectious period
  - ✓ R0= new infections/existing Infections.
- **Infectious period:**
  - ✓ It depends on the virus, which can be a few weeks, months, or even decades.
  - ✓ The virus is assumed to be introduced to a population that does not have herd immunity or vaccination against it.

- **Range of R0 for Eradicating a Disease:**
  - ✓ The ideal scenario is when the R0 is below 1.
  - ✓ This means the infection is transmitted to fewer people. When such a rate is maintained over a considerable period of time, the disease is eradicated.
- **World Study:**
  - ✓ While many studies have differed in their conclusions, the World Health Organization (WHO) has estimated the R0 for coronavirus at 1.4 to 2.5.
  - ✓ In China's Wuhan, where the disease originated, lockdown measures brought the Rt (effective rate) down to 0.3, thus significantly slowing the number of new infections.
  - ✓ Governments around the world which have enforced such measures are hoping to follow the same path, although experts fear a second wave of infections once lockdowns are lifted.

13. Asymptomatic Virus Carriers

Why in News?

- Researchers have gathered evidence that in China, the epidemic was driven by a lot of not-very-sick people. They estimate that about 86% of infections early in that outbreak were transmitted by people who never got sick enough to go to the doctor.

Highlights:

- To have any idea whether current social distancing efforts are helping slow the spread of coronavirus, and to gauge how long we should go on this way, scientists need to know how many people have mild or asymptomatic cases of Covid-19.

Asymptomatic Carriers:

- Since the symptoms are vague and possibly non-existent, the case numbers that climb by the day aren't what they seem. The true numbers may be much higher or only a little higher. Understanding the mild cases can help researches get a handle on the spread of the disease, how it's spreading and how widespread it's already become.
- The research was popularized as a warning against "silent spreaders", people who have no idea they are infected.
- Another study showed that in China, people within one family had symptoms that ranged from undetectable to severe. Random testing done in Iceland showed that 50% of people who tested positive had no symptoms.

- But more important than determining who has gotten the disease is determining who is giving it to others. The study suggested that about 86% of documented infections were picked up from people with undocumented ones.

- Symptoms are self-reported and subjective. The symptoms of mild coronavirus are pretty vague except for the fever, which people might not measure if they feel normal.

- New evidence suggests that those with very mild cases might experience a loss of the sense of smell. The prevalence of this symptom is not yet known – people who can still smell should not assume they are uninfected, but those who suddenly lose that sense should consider themselves sick. The range of severity is making this pandemic hard to fight — if it were severe in most people, as SARS was, it would be easier to stop the spread. If it were mild in most people, we'd treat it like the flu. But instead it's extremely severe and deadly in some people and extremely mild, and possibly even silent in others.

- It's been established that after people become infected, they can walk around for an average of five days and up to around two weeks before they start to feel sick, and it's not yet clear how many of those days their bodies shed enough of the virus to infect others.

- The conclusion was that people without documented symptoms were about half as contagious as those with them, and yet they constituted the majority of people who got and spread the disease during that period.

14. Ivermectin Drug

Why in News?

- Few scientists testing head lice drug Ivermectin found that it could be possible treatment to kill SARS-CoV-2, the virus that causes COVID-19.

- While countries across the world are leaning on Hydroxychloroquine, an anti-malarial drug to cure COVID-19, researchers are trying to find other possible drugs.

Highlights:

- Researchers says a single dose could remove all viral RNA within 48 hours. The drug which is on the initial stages on testing, is yet to tested on COVID-19 patients.

- The drug prevents the replication of SARS-CoV-2. When tested, the virus came to a rest within 24-48 hours after it was exposed to Ivermectin.

- Levels of the virus declined by 99.8% in 48 hours and completely within three days. Researchers also say that there was even a significant reduction within 24 hours.

- The drug helps in stopping the processes that allow proteins to move within the virus. It has also been proven that Ivermectin tackles other viruses such as HIV, dengue, influenza and Zika replicating, at least in the laboratory.
- Ivermectin was developed as a veterinary drug in the 1970s but is now used to treat head lice. It is also effective against parasites that cause other infections. Another interesting thing to note is, Ivermectin has already been approved by the World Health Organization as an "essential medicine."

Ivermectin:

- Ivermectin is a medicine used to kill parasites. Used since 1980s, the drug is mainly used in creams and lotions for head lice.
- Besides this, it is also used in a tablet form to cure roundworm infection and second-line treatment for scabies and rosacea, a skin condition that results in redness and causes pus-filled bumps on the face.
- The drug needs to be consumed with a glass of water on an empty stomach at least an hour before a meal. It is usually taken as a single dose or series of doses, as per the directions of the doctor. The drug may cause tiredness, loss of energy, stomach pain, vomiting, diarrhoea, dizziness, drowsiness and itchiness.
- In case of a skin or an eye infection, the medicine may lead to joint pain and swelling, swollen and tender lymph nodes, itching, rashes, fever and eye problems.
- Some of the serious side effects include low blood pressure, inability to breathe and can also lead to liver damage.

15. Two Coronavirus Vaccine enter Human Trial

Why in News?

- Two candidate vaccines for COVID-19 have entered the first phase of human clinical trials and another 60 candidate vaccines are in pre-clinical studies, the World Health Organisation (WHO) has confirmed.
- A vaccine trial is a clinical trial that aims at establishing the safety and efficacy of a vaccine prior to it being licensed.

Highlights:

- The vaccine candidate jointly developed by CanSino Biological Inc and Beijing Institute of Biotechnology uses the non-replicating viral vector as the platform, same as the non-corona candidates like Ebola, to develop a vaccine with a 'Adenovirus Type 5' candidate.

- Adenoviruses are common viruses that cause pneumonia and can deliver potential antigens to stimulate the production of antibodies that work against the disease.
- CanSino Biological Inc, in association with the Chinese Academy of Military Medical Science's Bioengineering Institute, had developed an Ebola vaccine in 2017.
- The other vaccine that has entered the first phase of trials is from the US-based biotech firm Moderna and the National Institute of Allergy and Infectious Diseases (NIAID) combine. This lipid nanoparticle (LNP) encapsulated mRNA candidate vaccine uses an RNA platform with multiple candidates.
- In this, the virus's genetic information is de-coded from the DNA to make proteins. mRNA, or messenger RNA, acts as an intermediary between the genetic information in DNA and the amino acid sequence of proteins, which gives cells command to make proteins that fight the viruses. But such vaccines have not yet been approved for human use.
- Normally, the vaccine candidate, from the pre-clinical stage, which includes testing in small and large animals, have to go through three phases of clinical trials to prove its safety and efficacy.
- These human trials are done on different population in various geographies and have to create huge data in the 3 phases of human trials for regulatory sanctions.
- In emergencies like this, fast tracking is possible, but the vaccine candidates still have to go through various trials before being introduced in the market. Typically, only one in ten experimental vaccines make it all the way through to Regulatory Approval.

16. NASA's VIPER Mission

Why in News?

- As a prelude to NASA's upcoming manned Artemis missions scheduled to start in 2024, NASA will be sending the golf-cart sized robot, VIPER (Volatiles Investigating Polar Exploration Rover), in 2023 to search for and map lunar resources (volatiles, minerals, and water ice) on the moon.

Highlights:

- Creating a map of the water ice on the moon will pave the way for future exploration and extraction missions. Water ice will be a critical resource for future exploration and colonization, not only for sustaining life (breathable oxygen) but also for deriving rocket fuel elements (hydrogen, oxygen).

VIPER Mission:

- The mission will target the south pole region of the moon (landing site to be determined), where previous NASA missions have confirmed water ice to be present, especially in the cold permanent shadow areas of craters.
- Once at the south pole, VIPER's operating radius will be several kilometers, where it will explore various types of soils (areas of constant light, partial light, and complete darkness).
- The rover will need to be robust enough to handle the extreme cold in the permanent shadow areas where temperatures never go above -250 F. The VIPER mission is planned to last approximately 100 days.
- VIPER will be outfitted with various equipment to perform its duties. First of all, to identify potential drilling spots, the Neutron Spectrometer System (NSS) provided by NASA will detect hydrogen underneath the surface from afar.
- Once a potential drilling spot has been identified, the rover will extract samples from down to 1-meter in depth by using The Regolith and Ice Drilling for Exploring New Terrain (TRIDENT) provided by Honeybee Robotics.
- Once extracted, VIPER will analyze the samples by using the Near InfraRed Volatiles Spectrometer System (NIRVSS) to determine the type of hydrogen (water molecule or hydroxyl). It will also analyze the volatile and mineral composition by using the Mass Spectrometer Observing Lunar Operations (MSolo).

17. Integrated Geospatial Platform created to aid devising area-specific strategies

Why in News?

- The Department of Science and Technology (DST), Government of India, has created an Integrated Geospatial Platform to help decision making during the current COVID-19 outbreak.

SAHYOG:

- The mobile application SAHYOG, as well as the web portal (https://indiamaps.gov.in/soiapp/) prepared & managed by the Survey of India (SoI), has been customized to collect COVID-19 specific geospatial datasets through community engagement to augment the response activities by Government of India to the pandemic.

- Information parameters required as per the Government of India strategy and containment plan for large outbreaks have been incorporated in the SAHYOG application.
- This mobile application will complement the "AAROGYA-SETU" mobile application launched by the Government of India for Contact tracing, Public awareness, and Self-assessment objectives.
- State Spatial Data Infrastructure (SSDI) in Madhya Pradesh, Odisha, Punjab, and Jammu & Kashmir have been providing collateral standards-based geospatial data services to the State and District Level Authorities in the respective States through State Geoportals for integration with related health data sets towards combating COVID-19 pandemic.

Advantages:

- This Integrated geospatial platform will strengthen the Nation's health emergency management due to the COVID-19 outbreak and support the socio-economic recovery process through the seamless provision of spatial data, information, and linkage between human, medical, technological, infrastructural and natural resources.
- Integration of demographic information with geospatial data is essential for decision making, governance, and development and this effort will be a special digital enabler for the platforms such as AAROGYA-SETU.
- The platform is created out of available geospatial datasets, standards-based services, and analytic tools and aid devising area-specific strategies to handle the socio-economic impact in the recovery phase
- DST's efforts in integrating geospatial information can help the country in taking rapid spatial information-based decisions to face the multilayered crisis that has caused the pandemic and brought and spread the impact of such decisions throughout the country.

18. Post-Intensive Care Syndrome

Why in News?

- Studies have pointed out that, after leaving the ICU, people may suffer from what is known as post-intensive care syndrome (PICS), which can happen to any person who has been in the ICU.
- PICS comprises impairment in cognition, psychological health and physical function of a person who has been in the ICU.

Highlights:

- As per the WHO-China Joint Mission report that examined 55,924 laboratory-confirmed cases of Covid-19, over 6.1 per cent were classified as critical, which means they experienced respiratory failure, shock and multiple organ failure. Many critical cases need ICU admissions.

- Critically ill Covid-19 patients are older, and have more comorbidities such as hypertension and diabetes.

- Significantly, Acute Respiratory Distress Syndrome (ARDS), one of the manifestations of Covid-19, is a common reason for ICU admission and such a person may need mechanical ventilation to deliver oxygen and remove carbon dioxide from the body.

- PICS is defined as new or worsening impairment in physical (ICU-acquired neuromuscular weakness), cognitive (thinking and judgment), or mental health status arising after critical illness and persisting beyond discharge from the acute care setting," the article notes.

- Psychological disability may arise in a person in the form of depression, anxiety and post-traumatic stress disorder (PTSD).

- The most common PICS symptoms are generalised weakness, fatigue, decreased mobility, anxious or depressed mood, sexual dysfunction, sleep disturbances and cognitive issues. These symptoms may last for a few months or many years after recovery.

- Patients who develop this may take at least a year to fully recover, until which time they may have difficulty in carrying out everyday tasks such as grooming, dressing, feeding, bathing and walking.

- Further, after leaving the ICU, over 30-80 per cent may develop problems related to cognitive function and other mental health issues, including difficulty in falling and staying asleep.

- It is recommended that to avoid PICS, patients' use of deep sedation is limited and early mobility is encouraged, along with giving them "aggressive" physical and occupational therapy.

- Further, patients should be given the lowest dose of pain medications when possible, and should be put on lung or cardiovascular rehabilitation treatments along with treatments for depression, anxiety and PTSD.

19. Scientists Discover Six New Coronaviruses in Bats

Why in News?

- Researchers have discovered six new coronaviruses in bats in Myanmar -- the first time these viruses have been detected anywhere in the world.

Highlights:

- Researchers detected these new viruses while conducting biosurveillance of animals and people to better understand the circumstances for disease spillover as part of the PREDICT project.

- The newly discovered coronaviruses are not closely related to coronaviruses Severe Acute Respiratory Syndrome (SARS CoV-1), Middle East Respiratory Syndrome (MERS) or COVID-19. The findings will help understand the diversity of coronaviruses in bats and inform global efforts to detect, prevent and respond to infectious diseases that may threaten public health, particularly in light of the ongoing COVID-19 pandemic.

- Worldwide, humans are interacting with wildlife with increasing frequency, so the more we understand about these viruses in animals, what allows them to mutate and how they spread to other species, the better we can reduce their pandemic potential.

- The team focused their research on sites in Myanmar where humans are more likely to come into close contact with local wildlife due to changes in land use and development. Researchers tested and compared the samples to known coronaviruses and identified six new coronaviruses for the first time. The team also detected a coronavirus that had been found elsewhere in Southeast Asia, but never before in Myanmar.

- These findings underscore the importance of surveillance for zoonotic diseases as they occur in wildlife. The results will guide future surveillance of bat populations to better detect potential viral threats to Public Health.

20. OSIRIS-REx Mission

Why in News?

- NASA's OSIRIS-REx spacecraft has been orbiting asteroid Bennu for over a year now, since it arrived at the space rock in December 2018. Now, the spacecraft has successfully completed its 'Checkpoint' rehearsal and is one step closer to land on the asteroid's surface.

Highlights:

- The rehearsal allowed the OSIRIS-REx team to test whether the various systems aboard the spacecraft like imaging, navigation and ranging systems worked as they should during descent.
- While landing the OSIRIS-REx autonomously checks its position and velocity at a location known as the checkpoint. At this position, it adjusts the trajectory down towards the surface.
- It was able to successfully deploy its sampling arm which is known as the Touch-And-Go Sample Acquisition Mechanism (TAGSAM) and used the instruments on board to make observations of the sample site.
- Through the rehearsal, the team also confirmed that OSIRIS-REx's Natural Feature Tracking (NFT) guidance system worked accurately.

OSIRIS-REx Mission:

- The OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer) is a NASA asteroid study and sample-return mission.
- The mission's primary goal is to obtain a sample of at least 60 grams (2.1 oz) from 101955 Bennu, a carbonaceous near-Earth asteroid, and return the sample to Earth for a detailed analysis.
- The material returned is expected to enable scientists to learn more about the formation and evolution of the Solar System, its initial stages of planet formation, and the source of organic compounds that led to the formation of life on Earth.
- If successful, OSIRIS-REx will be the first U.S. spacecraft to return samples from an asteroid.

Objectives:

- Return and analyze a sample of pristine carbonaceous asteroid regolith in an amount sufficient to study the nature, history, and distribution of its constituent minerals and organic compounds.
- Map the global properties, chemistry, and mineralogy of a primitive carbonaceous asteroid to characterize its geologic and dynamic history and provide context for the returned samples.
- Document the texture, morphology, geochemistry, and spectral properties of the regolith at the sampling site in situ at scales down to millimeters.

- Measure the Yarkovsky effect (a thermal force on the object) on a potentially hazardous asteroid and constrain the asteroid properties that contribute to this effect. Characterize the integrated global properties of a primitive carbonaceous asteroid to allow for direct comparison with ground-based telescopic data of the entire asteroid population.

21. Chitra GeneLAMP-N

Why in News?

- Chitra GeneLAMP-N makes confirmatory tests results of COVID-19 possible in 2 hours.

Highlights:

- Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, an Institute of National Importance, of the Department of Science and Technology (DST), has developed a diagnostic test kit that can confirm COVID-19 in 2 hours at a low cost.

- The confirmatory diagnostic test, which detects the N Gene of SARS- COV2 using reverse transcriptase loop-mediated amplification of viral nucleic acid (RT-LAMP), will be one of the world's first few if not the first of its kind in the world.

- The test kit, funded by the DST called Chitra GeneLAMP-N, is highly specific for SARS-CoV-2 N-gene and can detect two regions of the gene, which will ensure that the test does not fail even if one region of the viral gene undergoes mutation during its current spread.

- The tests performed at National Institute of Virology (NIV) Alappuzha (authorized by ICMR) show that Chitra GeneLAMP- N has 100% accuracy and match with test results using RT-PCR.

- This has been intimated to ICMR, the authority to approve COVID-19 testing in India, following which license needs to be obtained from the Central Drugs Standard Control Organisation (CDSCO) for manufacture.

Significance:

- Current PCR kits in India enable detection of E gene for screening and RdRp gene for confirmation. Chitra GeneLAMP-N gene testing will allow confirmation in one test without the need for a screening test and at much lower costs.

- The detection time is 10 minutes, and the sample to result time (from RNA extraction in swab to RT-LAMP detection time) will be less than 2 hours.

- A total of 30 samples can be tested in a single batch in a single machine allowing a large number of samples to be tested each day.

- The testing facility can be easily set up even in the laboratories of district hospitals with limited facilities and trained laboratory technicians.
- The results can be read from the machine from the change in fluorescence.
- The cost of testing with the new device for LAMP testing and the test kit for 2 regions of N gene (including RNA extraction) will be less than Rs 1000/test for the laboratory.

22. Hydroxychloroquine Does not Reduce Viral Load

Why in News?

- Results of a randomised, control trial using hydroxychloroquine drug in 150 COVID-19 patients show that the drug does not reduce the viral load even on day 28.

Highlights:

- Seventy-five patients got the drug and standard of care while the remaining got only standard of care. Patients were given 1,200 mg of the drug for three days followed by 800 mg daily for two and three weeks in patients with mild/moderate and severe symptoms, respectively.
- Researchers say that in contrast to other trials that have shown good results, the randomised trial did not show that hydroxychloroquine drug was able to suppress viral replication.
- This is the first trial using hydroxychloroquine where patients have been randomised to receive either the drug or just standard of care.
- However, patients who got the drug did show quicker alleviation of clinical symptoms, possibly through anti-inflammatory properties and improvement in white blood cell count. The drug did not cause any serious adverse effects in patients. But some patients did experience adverse effects.
- During the trial, specimens were taken from the upper and/or lower respiratory tract on the day of screening and during treatment and post-treatment follow-up.
- The authors say that the dosage used in the trial was meant to reach the 50% effective concentrations of hydroxychloroquine against the virus.
- In the case of COVID-19, systemic inflammation or cytokine storm is the driver of disease progression and death. Substantial reduction in white blood cell count and increase in inflammatory response have generally been observed in patients who have eventually progressed and died.

- The results suggest clinical benefits of adding hydroxychloroquine into the current standard management to limit inflammatory response, which is the key to prevent systemic inflammation and subsequent multiple organ Failure and Death.

23. Ramdesivir Usage in India

Why in News?

- The drug remdesivir has been under the spotlight as a possible treatment for critical cases of novel coronavirus disease (COVID-19). Globally, it is one of the four possible lines of treatment being investigated in the Solidarity trials under the aegis of the World Health Organization (WHO).

Highlights:

- While the drug is yet to get approval in any country to treat COVID-19, recent studies have claimed they have found promising results.
- It is a drug with antiviral properties that was manufactured by US-based biotechnology company in 2014, to treat Ebola cases. It was also tried in patients of MERS and SARS, both caused by members of the coronavirus family, but experts said it did now show promising results back then.
- Coronaviruses have a single-strand RNA as their genetic material. When the novel coronavirus SARS-CoV2 enters a human cell, an enzyme called RdRP helps the virus replicate. Remdesivir works by inhibiting the activity of RdRP. A small cohort study used remdesivir on 61 patients in USA, Canada, Europe and Japan. These patients were critically ill with low oxygen levels, and were administered remdesivir under manufacturer Gilead's compassionate use programme.
- The study found clinical improvement in 68% of the cases, with their oxygen levels improving; 47% patients could be discharged after treatment, and more than 50% patients (17 of 30) no longer required mechanical ventilator support.
- The study found that clinical improvement was less frequent in patients on invasive ventilators or among elderly people. Seven patients died despite treatment with remdesivir.
- The study had no control arm, meaning another group of patients who were not administered the drug, to compare outcomes of treatment with and without remdesivir. Unless such trials are conducted, the effect of the drug remains a grey zone.

- The Indian Council of Medical Research (ICMR) has said it can consider using the drug if local manufacturers are willing to procure it. Remdesivir is currently not available in India.
- Hydroxychloroquine, an anti-malarial drug, is undergoing multiple trials to assess if it can be used to treat severe COVID-19 cases. It works by decreasing the acidity in parts of the cell where the virus is present, thereby inhibiting it.
- Ritonavir and lopinavir are two antiviral drugs used for treatment of HIV. These too work by inhibiting the virus's RNA. Specifically, they target the enzyme that helps the virus split proteins.

24. TriboE Mask

Why in News?

- A team of researchers at the Centre for Nano and Soft Matter Sciences (CeNS), Bangalore, have come up with a recipe for making face masks, termed as TriboE Mask, that can hold electric charges to restrict the entry of infections.

Highlights:

- The recent innovation is based on electrostatics.
- It uses principles of Triboelectricity.
- When two non-conducting layers are rubbed against each other, the layers develop positive and negative charges instantly and continue to hold the charges for some time.
- This electric field which is quite strong at proximity can be used to deactivate or possibly even kill the germs.

TriboE Mask:

- The mask is three-layered –a layer of nylon cloth sandwiched between polypropylene layers.
- Polypropylene layers are sourced from commonly used non woven grocery bags.
- In place of nylon, silk fabric from an old saree or shawl may also be cut and used.
- When layers are rubbed against each other, the outer layers develop negative charges, while nylon will hold the positive charges. This will act as double electric wall protection against the infectious entities crossing. As the mask is made out of commonly available fabrics, it can be washed just like any other cloth and can be reused.
- At this stage, the mask is, however, not recommended to healthcare professionals and patients.

25. Six-planet System Discovered

Why in News?

- Researchers have discovered a star system with six planets whose orbits are in almost perfect rhythm.

Highlights:

- The star, dubbed HD 158259, is orbited by a "super-Earth" and "five mini-Neptunes". Astronomers only know of around dozen star systems containing six or more planets. However, what makes the HD 158259 system so remarkable is the exceptionally regular spacing of its planets.

- Using measurements taken using the SOPHIE spectrograph and the TESS exoplanet-hunting space telescope, an international team of researchers were able to precisely calculate the orbits of each planet.

- All pairs of subsequent planets in the system are said to be close to the "3:2 resonance."

- This essentially means that as the first planet, or the one closest to the star, completes three orbits; the second one completes roughly two orbits. And as the second planet completes three orbits, the third completes roughly two.

- This pattern continues for all the subsequent planets. These intriguing orbital periods could provide scientists with clues as to how the system formed, suggesting that they did not form close to their current positions.

- The evidence indicates that the star system is compact, highlighted by the fact that the distance between the outermost planet and HD 158259 is 2.6 times smaller than the distance between the sun and Mercury in our own solar system.

- The planets of the system, which is located around 88 light-years away, appear to have masses between two and six times that of the Earth's.

- Five of them are defined as super-Earths, meaning that they have a mass higher than that of our planet but significantly lower than Uranus or Neptune.

- The remaining planet is described as a "mini-Neptune", planets that are less massive than Neptune while still resembling the gas giant in our own solar system in terms of atmosphere and composition.

26. Stem Cells a New Ray of Hope in Battle against Covid-19

Why in News?

- Researchers are now looking at Stem Cells as a cure for Covid-19 patients.
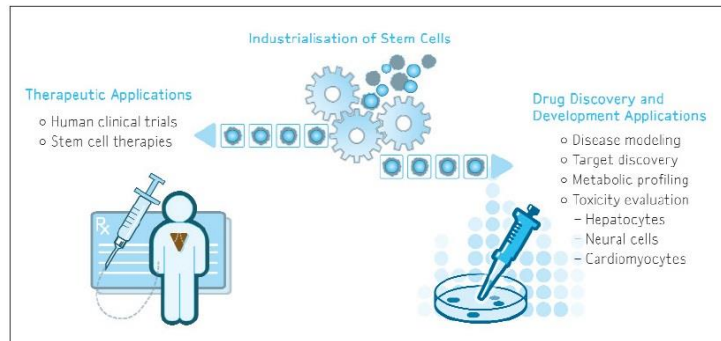
Figure 1: Application of stem cells for both therapeutic and drug discovery applications

Highlights:

- Key scientific groups worldwide, including those in China and the US, have been working to test the treatment.
- An Israeli pharmaceutical company, Pluristem Therapeutics, has tested it in seven critical hospitalized patients and found positive results. The company is now seeking approval to begin clinical trials.
- The US Food and Drug Administration (FDA) has already approved clinical trials to study covid-19 patients who have been administered MSC (mesenchymal stem-cells) derived from the placenta to prevent inflammation of lungs.

Efficacy of Approach against Covid 19:

- The therapeutic approach involves intravenous injection of mesenchymal stem-cells (MSC) from a human placenta into a covid-19 patient to boost the body's immune response against the infection.
- Further Stem-cells have been successful in treating degenerative diseases, especially Alzheimer's, as well as Type-1 diabetes.
- The advantage that stem-cells have is that they have strong anti-inflammatory and immunomodulatory properties, which can help strengthen our immune system.
- This is important in case of covid-19, where they could reduce inflammation of the lungs, which are the most affected.
- It could help build up regenerative cells in the lungs, which could protect the epithelial cells of the lungs, prevent lung damage and help patients recover.

Stem Cells:

- They are undifferentiated or partially differentiated cells that can differentiate into various types of cells and divide indefinitely to produce more of the same stem cell.
- Under the right conditions in the body or a laboratory, stem cells divide to form more cells called daughter cells. These daughter cells either become new stem cells (self-renewal) or become specialized cells (differentiation) with a more specific function, such as blood cells, brain cells, heart muscle cells or bone cells.
- No other cell in the body has the natural ability to generate new cell types.

Classification:

- **Based on formation at Different times of human Life:**
- **Embryonic Stem cells:**
  - ✓ These stem cells come from embryos that are three to five days old. At this stage, an embryo is called a blastocyst and has about 150 cells.
  - ✓ These are pluripotent stem cells, meaning they can divide into more stem cells or can become any type of cell in the body.
  - ✓ This versatility allows embryonic stem cells to be used to regenerate or repair diseased tissue and organs
- **Adult Stem Cells:**
  - ✓ These stem cells are found in small numbers in most adult tissues, such as bone marrow or fat.
  - ✓ Compared with embryonic stem cells, adult stem cells have a more limited ability to give rise to various cells of the body.
  - ✓ However, emerging evidence suggests that adult stem cells may be able to create various types of cells.
  - ✓ For instance, bone marrow stem cells may be able to create bone or heart muscle cells.
- **Induced Pluripotent Stem cells or (iPSC's):**
  - ✓ These cells are not found in the body but made in the laboratory from cells of the body.
  - ✓ The iPSC cells have properties similar to those of embryonic stem cells.
  - ✓ Human iPSCs were generated in 2007.
- **Perinatal stem cells:**
  - ✓ Researchers have discovered stem cells in amniotic fluid as well as umbilical cord blood.
  - ✓ These stem cells also have the ability to change into specialized cells.

- ✓ Amniotic fluid fills the sac that surrounds and protects a developing fetus in the uterus.
- **Based on Potency:**
- Totipotent **(also known as omnipotent) stem cells can differentiate into embryonic and extraembryonic cell types.**
  - ✓ Such cells can construct a complete, viable organism.
  - ✓ These cells are produced from the fusion of an egg and sperm cell.
  - ✓ Cells produced by the first few divisions of the fertilized egg are also totipotent.
- Pluripotent stem cells are the descendants of totipotent cells and can differentiate into nearly all cells, i.e. cells derived from any of the three germ layers.
- Multipotent stem cells can differentiate into a number of cell types, but only those of a closely related family of cells.
- Oligopotent stem cells can differentiate into only a few cell types, such as lymphoid or myeloid stem cells.
- Unipotent cells can produce only one cell type, their own, but have the property of self-renewal, which distinguishes them from non-stem cells

Significance:

- **Increase understanding of how diseases occur.**
  - ✓ By watching stem cells mature into cells in bones, heart muscle, nerves, and other organs and tissue, researchers and doctors may better understand how diseases and conditions develop.
- **Test New Drugs for Safety and Effectiveness.**
  - ✓ Before using investigational drugs in people, researchers can use some types of stem cells to test the drugs for safety and quality.
- **Generate healthy cells to replace diseased cells (regenerative medicine).**
  - ✓ Stem cells can be guided into becoming specific cells that can be used to regenerate and repair diseased or Damaged Tissues in People.

27. Sequencing of Indian species

Why in News?

- The Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) is gearing up to play an important role in a nationwide project to decode the genetic information of all known species of plants and animals in the Country.

Highlights:

- The Institute has been chosen as one of the Biological Knowledge and Resource Centres of the Indian Initiative on Earth Bio Genome Sequencing (IIEBS).
- It will join hands with other premier research institutes to utilise cutting edge technologies for genome sequencing.
- The Union Department of Biotechnology has allotted 143.89 lakh rupees for JNTBGRI to take up the project.
- With over 5,000 plant species in its field gene bank and conservatories, JNTBGRI has a major role in conserving the endemic flora of the Western Ghats.

Genome Sequencing:

- A genome is an organism's complete set of DNA, including all its genes.
- It contains all the information needed to build and maintain that organism.
- By sequencing the genome, researchers can discover the functions of genes and identify which of them are critical for life.
- This entails sequencing all of an organism's chromosomal DNA as well as DNA contained in the mitochondria and, for plants, in the chloroplast.

Earth Bio Genome Project:

- It is a moonshot for biology under which an international consortium of scientists aims to sequence, catalog and characterize the genomes of all of Earth's eukaryotic biodiversity over a period of ten years.
- It has 3 main Goals - Protecting biodiversity, understanding ecosystems and benefiting human life.
- The project was officially launched in November 2018.

Indian Initiative on Earth Bio Genome Sequencing (IIEBS):

- It has been undertaken to participate in the Earth Bio genome Project, a global effort that aims to sequence the genomes of all life forms on our planet.
- The main objective is to sequence about 1000 plants and animal species in the next five years. The National Institute of Plant Genome Research, New Delhi is the coordinating centre for the nationwide project involving a total of 24 institutes.

Significance of Project:

- This will eventually lead to the generation of the genetic blueprint of all living forms.

- The digital repository of genome sequences is expected to provide the critical infrastructure for better understanding of ecosystems and conservation of biodiversity.
- It will also help in the development of new treatments for infectious and inherited diseases.
- Further new types of agricultural products, biomaterials and biological fuels can be made using this along with curbing evil practices like biopiracy.
- India's participation in the EBP would provide a boost for the field of genomics and bioinformatics within the country.

Human Genome Project:

- It was an international scientific research project with the goal of determining the base pairs that make up human DNA, and of identifying and mapping all of the genes of the human genome from both a physical and a functional standpoint.
- It remains the world's largest collaborative biological project.
- After the idea was picked up in 1984 by the US government when the planning started, the project formally launched in 1990 and was declared complete on April 14, 2003.
- The project was not able to sequence all the DNA found in human cells.
- It sequenced only euchromatic regions of the genome, which make up 92.1% of the human Genome.

28. Neutron Stars

Why in News?

- Scientists studying life of dead stars have been able to measure the radius of the neutron star that allows them to study various aspects of the life of the star after it undergoes supernova explosion.
- The new measurements, along with data collected by terrestrial gravitational wave telescopes on how neutron stars warp space and time by colliding and merging with each other, will help scientists peer into the depths of a dead star.

Highlights:

- The life of a typical star is as fascinating as its death. It shines by burning its nuclear fuel, converting hydrogen into helium to hold itself up against the pull of gravity for billions of years. But when the fuel is exhausted, gravity wins the long drawn out battle and causes the stellar remnants to collapse.

- New nuclear reactions then begin to convert the helium into carbon, releasing more gravitational energy.
- When all the helium in a star is converted to carbon, the core becomes more compact and hotter still, as nuclear fusion converts the carbon into oxygen.
- Eventually, most of the core material is converted into an iron-rich nucleus, at which point the addition of more protons and neutrons from the reaction does not release any more energy. With the source of heat gone, larger stars simply collapse, the mass of their outer layers falling inwards under the pull of gravity and getting very hot as gravitational energy is released. Given enough mass, in these conditions, there is a sudden flareup of activity as protons and electrons of hydrogen and helium from the star's atmosphere fuse into neutrons and compress the core explosively.
- The explosion takes place in a shell around the core and the blast travels outwards, ejecting the rest of the star's atmosphere in a flash as bright as a galaxy to form an expanding nebula made of ionised gas and dust.
- It also travels inwards, squeezing the core tight and producing a smattering of elements heavier than iron, some of which may get thrown out into the nebula. This 'supernova' explosion leaves behind a rapidly spinning neutron star known as a pulsar: the smallest and densest known entity in the universe.
- While scientists have been able to figure out this much of a star's story, nobody really knows what becomes of a neutron star or a pulsar after this.
- Fortunately, the nature of neutron stars as the densest objects in the universe makes it possible for scientists to figure out what goes on inside them as long as they can measure accurately the width of neutron stars, from which its density can be determined.

NICER:

- NASA's Neutron Star Interior Composition Explorer (NICER), a large telescope on the orbiting International Space Station, is helping astronomers do just that.
- NICER's sensors are more precise than atomic clocks and can pick up X-rays spewed into space by pulsars. NICER turned in data so precise that astronomers could measure two crucial aspects of neutron stars: their speed of rotation and how much the photons (light particles) from pulsars are bent by gravity.
- The results, when combined with the stellar mass (the masses of several neutrons stars are already known), yield the star's radius.

29. China builds Asia's Largest Steerable Telescope

Why in News?

- China is constructing the largest steerable radio telescope in Asia with a 70-meter-diameter antenna to receive data from its first Mars exploration mission which is expected to be launched this year.

Highlights:

- The telescope, with an antenna the size of nine basketball courts, was built by the National Astronomical Observatories of the Chinese Academy of Sciences in Wuqing District of northern China's Tianjin.

- China aims to complete orbiting, landing and roving on the red planet in one mission, which has been named Tianwen-1.

- It will be a key facility to receive scientific data sent back by the Mars probe, which can be up to 400 million km from Earth, and the signals will be very weak.

- The construction of the telescope began in October 2018 and is expected to be completed this year. Many new technologies have been utilized to improve efficiency and reduce interference noises.

- The exploration of Mars will not only investigate whether there is or was life on Mars but also help bring to light the history of evolution and future development trends of Earth, as well as search for potential living space for human beings.

- After completion, the telescope will greatly improve China's ability to receive deep space exploration data and will lay a foundation for China's future asteroid and comet probing and other planetary exploration missions.

30. Multi-System Inflammatory State Requiring Intensive Care

Why in News?

- Recently, the Paediatric Intensive Care Society (PICS) in the United Kingdom(UK) had observed an apparent rise in the number of children (of all ages) with a "multi-system inflammatory state requiring intensive care".

Highlights:

- Children in the UK are reportedly falling ill with symptoms of high fever and swollen arteries, and doctors believe it could be coronavirus-related.

- According to the PICS, there is a growing concern of a SARS-CoV-2 related inflammatory syndrome emerging in children in the UK or that there may be another unidentified infectious pathogen associated with these cases.
- The National Health Service (NHS) has issued a nation-wide alert, and asked doctors to urgently report any cases with similar symptoms.
- Not just the UK, doctors in Italy and Spain have also alerted authorities of similar cases.

Multi-system Inflammatory State:

- This rare illness causes inflammation of the blood vessels, which leads to low blood pressure.
- It affects the entire body as it causes a build-up of fluid in the lungs and other organs.
- This condition is similar to Kawasaki disease. Patients suffering from it require intensive care to support the lungs, heart and other organs, according to The Guardian.

Symptoms:

- Children were showing abdominal and gastrointestinal symptoms as well as cardiac inflammation.
- According to PICS, there were also overlapping symptoms of toxic shock syndrome and atypical Kawasaki disease.

Toxic shock syndrome (TSS):

- It is a rare life-threatening condition caused when certain bacteria enter the body and release harmful toxins. If not treated in time, the condition could be fatal.
- Symptoms include high temperature, flu-like symptoms including headache, sore throat, cough, diarrhea, dizziness or fainting, difficulty breathing and confusion.
- Some patients suffering from TSS may need ICU admissions.

Kawasaki Disease:

- It is an acute inflammatory disease of the blood vessels and usually occurs in children below the age of five.
- The inflammation caused by the disease affects many parts of the body but has a more serious effect on the heart since it causes inflammation in the coronary arteries that are responsible for supplying blood to the heart.
- This results in enlargement or in the formation of aneurysms that can lead to heart attacks.
- Symptoms include fever, changes in extremities, rashes, redness of the cornea, red and cracked lips, a red tongue and lymph node enlargement of the Neck.

31. Privacy concerns during a pandemic

Why in News?

- The AarogyaSetu app, developed by the National Informatics Centre (NIC) under the Ministry of Electronics & Information Technology (MEITY), has been launched for pan-India use.

- It is available in 11 languages and has crossed the 75 million mark of user downloads. Of late, it has raised privacy concerns amid executive overreach.

Highlights:

- While India is grappling with a grave public health crisis, it goes beyond doubt that the government should take charge of tackling the COVID-19 pandemic.

- And thus the extraordinary actions of the Central and federal governments to maintain a nationwide lockdown, to enforce norms of physical distancing and to restrict movement, have garnered popular support.

- However, the arguments like executive's powers are limitless even to the extent of suspending Fundamental Rights can seem appealing in these circumstances, but the overreach at executive's end shouldn't turn into a new normal.

- So it becomes critical to pay close attention to the matter of civil rights, to ensure that rights that are fragile at the best of times, and particularly vulnerable in a crisis doesn't become inconspicuous in the long run.

How it Works:

Google's Play Store → Download AarogyaSetu

Apple's App Store → Download AarogyaSetu

- While registering the app collects name, sex, age, phone number, current location and travel history.

- This is uploaded to government servers, which then generates a unique digital identity for that user.

- When two AarogyaSetu users are within their Bluetooth range, this unique digital identity is exchanged along with the time and location of the meeting.

- The app will also keep a GPS log of all the places that the device had been at 15-minute intervals. These records are stored on the phone till the time any user tests positive or declares symptoms of COVID-19 in a self-assessment survey in the app. In such cases, the records are uploaded to the servers.

- When an app user tests positive, all unique digital identities in his or her records get an alert on the risk they face and instructions on self isolation and next steps.

Privacy Concerns:

- **No Privacy Policy of the App:**
  - ✓ Currently, there is no legislation that elaborates on how the online privacy of Indians is to be protected. AarogyaSetu users have to accept the privacy policy provided by the government.

- **Storage, Access to the data:**
  - ✓ Though there is some light on where and how long the data will be retained, who will have access to it has been left vague. To quote the policy, "persons carrying out medical and administrative interventions necessary in relation to COVID-19" will have access to the data.

- **Technical Loopholes:**
  - ✓ The unique digital identity in AarogyaSetu is a static number, which increases the probability of identity breaches. A better approach would be constantly-changing digital identification keys like what Google and Apple deploy in their joint contact tracing technology.

- **Data Abundance:**
  - ✓ AarogyaSetu uses both Bluetooth as well as GPS reference points, which could be seen as an overkill. Other apps such as TraceTogether make do with Bluetooth.

- **Black Box:**
  - ✓ The Internet Freedom Foundation and the Software Freedom Law Center have raised the concern that the AarogyaSetu app is something of a black box. There is no documentation publicly available on the app.

- **Aftermath Concerns:**
  - ✓ In creating a list of infected persons, State governments have used the Epidemic Diseases Act of 1897. But this law scarcely accords the state power to publicise this information. These lists have also generated substantial second-order harms.
  - ✓ The stigma attached to the disease has led to an increase in morbidity and mortality rates, since many with COVID-19 or flu-like symptoms have refused to go to hospitals.

- Given that the right to privacy is not absolute, it can be legitimately curtailed. However, any such restriction, as the Court held in K.S. Puttaswamy v. Union of India (2017), must be tested against the requirements of:
  - ✓ Legality (the restriction is sanctioned by legislation),

- ✓ Necessity(the restriction made is in pursuance of a legitimate state aim and there exists a rational relationship between the purpose and the restriction made) and
- ✓ The doctrine of proportionality (that the State has chosen the "least restrictive" measure available to achieve its objective.).

- Inter arma silent leges, said Cicero: For among [times of] arms, the laws fall mute. But our fight against COVID-19 is not a war. Even if it were, our Constitution is intended for all times - for times of peace and for times of crises.

32. Electrostatic Disinfection Technology

Why in News?

- Electrostatic Disinfection Technology transferred for commercialization.

Highlights:

- CSIR-Central Scientific Instruments Organisation (CSIR-CSIO), Chandigarh, has designed and developed an innovative technology for effective disinfection and sanitization to fight the coronavirus pandemic.

- CSIR-CSIO has transferred this technology to a Nagpur-based company, Rite Water Solutions Pvt. Ltd., for commercialization and large-scale production.

- This technology has been found very efficient and effective to stop the spread of coronavirus and pathogens.

- Electrostatic Disinfection Machine is developed based on the electrostatic principle.

- It produces uniform and fine spray droplets of disinfectants in the size range of 10-20 micrometre to kill microorganisms and viruses.

- Due to the small size of droplets, the surface area of spray droplets increases thereby enhancing the interaction with harmful microorganisms and coronavirus.

- The machine uses very less disinfection material as compared to conventional methods, which helps to save natural resources with negligible increase of chemical waste in the Environment.

1. Companies Fresh Start Scheme, 2020

Why in News?

- The Ministry of Corporate Affairs introduced the Companies Fresh Start Scheme, 2020 and revised the LLP Settlement Scheme, 2020.
- To provide relief to law abiding companies and Limited Liability Partnerships (LLPs) in the wake of COVID 19.

Highlights:

- They both intend to make good any filing related defaults, irrespective of duration of default, and make a fresh start as a fully compliant entity.
- The USP of both the schemes is a one-time waiver of additional filing fees for delayed filings during the currency of the Schemes, i.e. during the period starting from 1st April, 2020 and ending on 30th September, 2020. Both the Schemes also contain provision for giving immunity from penal proceedings, including against imposition of penalties for late submissions . However, the immunity is only against delayed filings in MCA21 and not against any substantive violation of law.

MCA 21:

- It is an e-Governance initiative of the Ministry of Company Affairs (MCA), Government of India that enables an easy and secure access of the MCA services to the corporate entities, professionals and citizens of India. The MCA21 application is designed to fully automate all processes related to the proactive enforcement and compliance of the legal requirements under the Companies Act, 1956, New Companies Act, 2013 and Limited Liability Partnership Act, 2008.

Significance:

- The Schemes, apart from giving longer timelines for corporates to comply with various filing requirements under the Companies Act 2013 and LLP Act, 2008, significantly reduce the related financial burden on them, especially for those with long standing defaults, thereby giving them an opportunity to make a "fresh start".
- The Fresh Start scheme and modified LLP Settlement Scheme incentivise compliance and reduce compliance burden during the unprecedented public health situation caused by COVID-19.

Limited Liability Partnership:

- The Limited Liability Partnership Act, 2008 was enacted by the Parliament of India to introduce and legally sanction the concept of LLP in India.

- LLP is an alternative corporate business form that gives the benefits of limited liability of a company and the flexibility of a partnership.

- Limited liability is where a person's financial liability is limited to a fixed sum, most commonly the value of a person's investment in a company or partnership.

- The LLP can continue its existence irrespective of changes in partners. It is capable of entering into contracts and holding property in its own name.

- The LLP is a separate legal entity, is liable to the full extent of its assets but liability of the partners is limited to their agreed contribution in the LLP.

- Further, no partner is liable on account of the independent or unauthorized actions of other partners, thus individual partners are shielded from joint liability created by another partner's wrongful business decisions or misconduct.

LLP Settlement Scheme, 2020

- On March 3, 2020, Ministry of Corporate Affairs (MCA) introduced a scheme namely "LLP Settlement Scheme, 2020" for limited liability partnership (LLPs) by allowing a one-time condonation of delay in filing statutorily required documents with the Registrar of Office (ROC). Now to further reduce their compliance burden certain modifications have been made in that. The modifications are:
  - ✓ The scheme shall come into force from April 1, 2020 and remain till 30th September 2020.
  - ✓ Applicability: Any defaulting LLP is permitted to file belated documents which were due for filing till August 31, 2020.
  - ✓ The defaulting LLP which have filed belated documents till september 30, 2020 and made good the default shall not be subjected to prosecution by Registrar.

2. India's Defence Export -Import

Why in News?

- Based on the latest estimates released by the Stockholm International Peace Research Institute (SIPRI) in the period between 2009-13 and 2014-18, Indian defence imports fell even as exports increased.

Highlights:

- Indeed, the period between 2012 and 2019 saw Indian defence exports experiencing a considerable jump sourced from Indian public and private sector enterprises.

- In the last two fiscal years, 2017-18 and 2018-19, exports have witnessed a surge from 7,500 crore to 11,000 crore, representing a 40% increase in exports.

- Small naval crafts account for the bulk of India's major defence exports. However, export of ammunition and arms remain low.

- As a percentage of total Indian trade, defence-related exports for the fiscal years 2017-18 and 2018-19 were 0.8 and 0.73%, respectively.

- Russia's arms export to India fell 42?tween 2014-18 and 2009-2013. In the same period, India's arms imports decreased 24%.

- Although India is still the second-largest arms importer in the world over the last five years, with Pakistan ranking at 11th.

- Broadly, two factors appear to be driving this shift.

- The first is the 'Make in India' initiative, as part of which a number of components from Indian private and public sector enterprises have been prioritised by the government.

- The second set of factors is extraneous to India in the form of delays in supplying equipment by vendors and the outright cancellation of contracts by the Indian government or at least a diminution of existing contracts.

Role of Make in India and DPP:

- Under the 'Make in India' initiative, the Defence Procurement Procedure (DPP) lays out the terms, regulations and requirements for defence acquisitions as well as the measures necessary for building India's defence industry.

- It created a new procurement category in the revised DPP of 2016 dubbed 'Buy Indian Indigenously Designed, Developed and Manufactured' (IDDM).

- The 'Make' procedure has undergone simplification "earmarking projects not exceeding ten crores" that are government funded and 3 crore for Micro, Small and Medium Enterprises (MSMEs) that are industry funded. In addition, the government has also introduced provisions in the DPP that encourages technology transfers.

- Further Government dispensed with the erstwhile No Objection Certificate (NOC) under the DPP restricting exports of aerospace products, several dual-use items and did away with two-thirds of all products under these heads.

Public Sector Support:

- According to government of India data for the financial year 2018-19, the three armed services for their combined capital and revenue expenditures sourced 54% of their defence equipment from Indian industry which in turn helped decrease imports and augment exports.
- Among arms producers, India has four companies among the top 100 biggest arms producers of the world.
  - ✓ Hindustan Aeronautics Limited (HAL)
  - ✓ Indian ordnance factories
  - ✓ Bharat Electronics Limited (BEL)
  - ✓ Bharat Dynamics Limited (BDL)
- It is estimated, according to SIPRI, their combined sales were $7.5 billion in 2017, representing a 6.1% jump from 2016.

Impact on Exports-Imports owing to Cancellation and Delays:

- Indian defence acquisitions have also fallen due to the cancellation of big-ticket items.
- Take for instance the India-Russia joint venture for the development of the advanced Su-57 stealth Fifth Generation Fighter Aircraft (FGFA).
- India cancelled involvement in 2018 due to rising dissatisfaction in delays with the project as well as the absence of capabilities that would befit a fifth generation fighter jet.
- In 2015, the government also reduced the size of the original acquisition of 126 Rafale Medium Multi-Role Combat Aircraft (MMRCA) from Dassault to 36 aircraft, which is also responsible for significantly driving down the import bill.
- The delays in the supplies of T-90 battle tanks, and Su-30 combat aircraft from Russia and submarines from France, in 2009-13 and 2014-18, also depressed imports.

Bottlenecks in the Defence Sector:

- Governments, including the incumbent, have tended to privilege Defence Public Sector Units (DPSUs) over the private sector, despite 'Make in India'.
- This model is highly skewed, undermining the growth of private players and diminishes the strength of research and development, thereby impairing development of the sector.

Stockholm International Peace Research Institute:

- SIPRI is an Independent International institute dedicated to research into conflict, Armaments, Arms Control and Disarmament.

- Established in 1966, SIPRI provides data, analysis and recommendations, based on open sources, to policymakers, researchers, media and the interested public.
- Based in Stockholm, SIPRI is regularly ranked among the most respected think tanks worldwide.

3. E-way Bills

Why in News?

- Having been stuck for the last two weeks amid lockdown in the country, truckers raise concerns over e-way bills for goods in transit or in godowns, which were getting expired and could not be renewed on due dates.

E-way Bills:

- E-Way Bill is the short form of Electronic Way Bill.
- It is a unique document/bill which is electronically generated for the specific consignment/movement of goods from one place to another, either inter-state or intra-state and of value more than INR 50,000, required under the current Goods and Services Tax (GST) regime.
- It offers the technological framework to track intra-state as well as inter-state

movements of goods of value exceeding Rs 50,000, for sales beyond 10 km in the GST regime.

- The e-Way Bill has been made compulsory from 1st April 2018.
- When e-Way Bill is generated, a unique e-Way Bill Number (EBN) is made available to the supplier, recipient and the transporter.
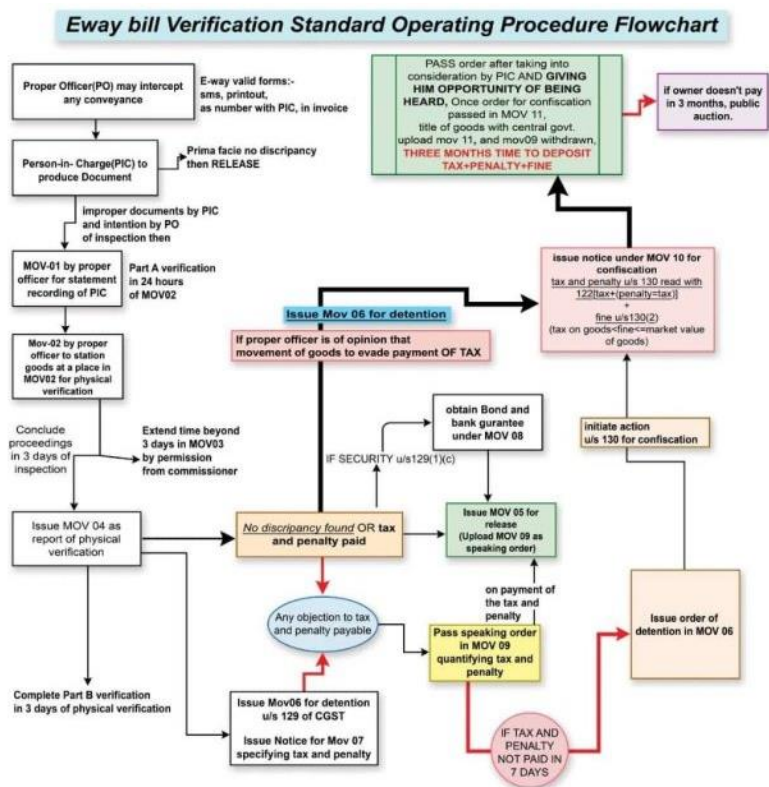
Who should Generate an e-Way Bill?

- **GST Registered Person:**
  - ✓ When a registered person causes the movement of goods/ consignment, either in the capacity of a consignee (i.e., buyer) or consignor (i.e., seller) in his/her vehicle or hired vehicle or railways or by air or by ship, then either the registered person or the recipient should generate the e-Way Bill.

- **Unregistered Person:**
  - ✓ When an unregistered person causes the movement of goods, through his/her conveyance or hired conveyance or using the services of a transporter, then the e-Way Bill needs to be generated either by the unregistered person or by the transporter.

When Should E-Way Bill Be Issued?

- Ideally, e-Way Bill should be generated before the commencement of movement of goods above the value of INR 50,000 (either individual invoice or consolidated invoice of multiple consignments).

- The movement of goods will be either about a supply/ reasons other than supply (like return)/ inward supply from an unregistered person.

- For purposes of an e-Way Bill, supply is considered either a payment in the course of business/ a payment which may not be in the course of business/ no consideration of payment (in the case of barter/ exchange).

4. Counter-cyclical Capital Buffers (CCyB)

Why in News?

- The RBI has announced that banks need not activate countercyclical capital buffers (CCyB) amid slowdown due to COVID-19 outbreak.

Countercyclical Capital Buffer (CCyB):

- A capital buffer is a mandatory capital that financial institutions are required to hold in addition to other minimum capital requirements.

- CCyB is the capital to be kept by a bank to meet business cycle related risks. It is aimed to protect the banking sector against losses from changes in economic conditions.

- Banks may face difficulties in phases like recession when the loan amount doesn't return.

- To meet such situations, banks should have own additional capital. This is an important theme of the Basel III norms.

CCyB Framework in India:

- The framework on CCyB was put in place by the RBI in terms of guidelines issued in 2015 wherein it was advised that the CCyB would be activated as and when the circumstances warranted.
- The framework envisages the credit-to-GDP gap as the main indicator, which is used in conjunction with other supplementary indicators.
- It requires banks to build up a buffer of capital in good times, which may be used to maintain flow of credit to the real sector in difficult times.
- The buffer was also meant to restrict the banking sector from indiscriminate lending in the periods of excess credit growth, which have often been associated with the building up of system-wide risk.

5. Unemployment Rate in India sees Significant Increase

Why in News?

- The Centre for Monitoring Indian Economy (CMIE) has said that the unemployment rate shot up in March. The employment rate in the economy fell to an all-time low of 38.2 percent in March 2020.
- With the coronavirus outbreak severely affecting every country, its impact on an already hobbling Indian economy is set to be devastating if the latest data on unemployment rate is taken as an indicator.

Highlights:

- The Labour Participation Rate (LPR) in March 2019 was 42.7 percent. This is the first time the LPR has fallen below 42 percent.
- The monthly figures from the CMIE that were released recently also show a curious inversion. In urban India, unemployment among the uneducated is at a higher level than those with a graduate degree (13%), for the first time since early-2016. Most of the people are employed in service sector jobs in construction, repair, or unorganized transport, all of which have come to a standstill due to the current lockdown.
- Early estimates from CMIE's weekly tracker indicate that at least 50 million Indians may have lost their jobs in the last two weeks.
- The real impact of wage cuts and job losses won't be felt immediately on account of the temporary relief measures announced by the government and the RBI.

- The government has unveiled a Rs 1.75 lakh crore welfare package for poor while the RBI announced a series of measures to ease liquidity in the system (to the tune of Rs 3.74 lakh crore).

6. Dollar Swap Agreement

Why in News?

- India is working with the United States to secure a dollar swap line that would help in better management of its external account and provide extra cushion in the event of an abrupt outflow of funds.

Highlights:

- India already has a $75 billion bilateral currency swap line with Japan, which has the second highest dollar reserves after China. The Reserve Bank of India also offers similar swap lines to central banks in the SAARC region within a total corpus of $2 billion.

- While India is largely expected to tide over any challenge posed by continued outflows of funds from the markets, a swap line with the US Federal Reserve provides additional comfort to the forex markets.

- Foreign institutional investors (FIIs) have been large sellers in the Indian equity and debt markets in March and April so far, as concerns over the economic effects of the COVID-19 pandemic has hit investor sentiment.

- Even as the stock markets have seen a pullback from earlier low levels, there is apprehension that the economic impact of COVID-19 will last for a significant length of time, and there is unlikely to be any V-shaped recovery in the economy or in the financial markets.

- Despite the slump in global crude oil prices and reduction in imports due to the pandemic outbreak, a sharp outflow of funds resulting from foreign portfolio investors (FPIs) looking for safer havens amidst the current global uncertainty, has pulled down India's foreign exchange reserves.

- In a swap arrangement, the US Fed provides dollars to a foreign central bank, which, at the same time, provides the equivalent funds in its currency to the Fed, based on the market exchange rate at the time of the transaction.

- The parties agree to swap back these quantities of their two currencies at a specified date in the future, which could be the next day or even three months later, using the same exchange rate as in the first transaction.

- These swap operations carry no exchange rate or other market risks, as transaction terms are set in advance. The absence of an exchange rate risk is the major benefit of such a facility.

- The Fed already has permanent swap arrangements with the Bank of Canada, the Bank of England, the European Central Bank, the Bank of Japan, and the Swiss National Bank. Other large economies including India, China, Russia, Saudi Arabia and South Africa currently do not have a currency swap line with the US.

7. Helicopter Money

Why in News?

- Telangana Chief Minister K. Chandrashekhar Rao has urged that RBI should implement quantitative easing policy by modifying FRBM Act and allow helicopter money.

Highlights:

- Observing that there is a fall in revenues of both the state and central governments against the backdrop of the coronavirus pandemic, Rao said a policy of Quantitative Easing (QE) is the only way to deal with the situation.

- Explaining the issue, he said if funds are pumped into the society, there is a possibility of getting some relief and reviving the system.

- This will facilitate the states and financial institutions to accrue funds. We can come out of the financial crisis. Release 5 percent of funds from the GDP through Quantitative Easing Policy.

Helicopter Money:

- This is an unconventional monetary policy tool aimed at bringing a flagging economy back on track. It involves printing large sums of money and distributing it to the public. Unexpectedly dumping money onto a struggling economy with the intention to shock it out of a deep slump. Under such a policy, a central bank directly increase the money supply and, via the government, distribute the new cash to the population with the aim of boosting demand and inflation.

- Quantitative easing also involves the use of printed money by central banks to buy government bonds. But not everyone views the money used in QE as helicopter money. It sure means printing money to monetise government deficits, but the govt has to pay back for the assets that the central bank buys.

8. IMF projects 1.9% growth for India in 2020

Why in News?

- The COVID-19 pandemic is expected to cause a -3% change in global output in 2020, much worse than the 2008-09 financial crises, as per the International Monetary Fund's (IMF) World Economic Outlook (WEO).

Highlight:

- A rare disaster, a coronavirus pandemic, has resulted in a tragically large number of human lives being lost.

- As countries implement necessary quarantines and social distancing practices to contain the pandemic, the world has been put in a Great Lockdown.

- The magnitude and speed of collapse in activity that has followed is unlike anything experienced in our lifetimes.
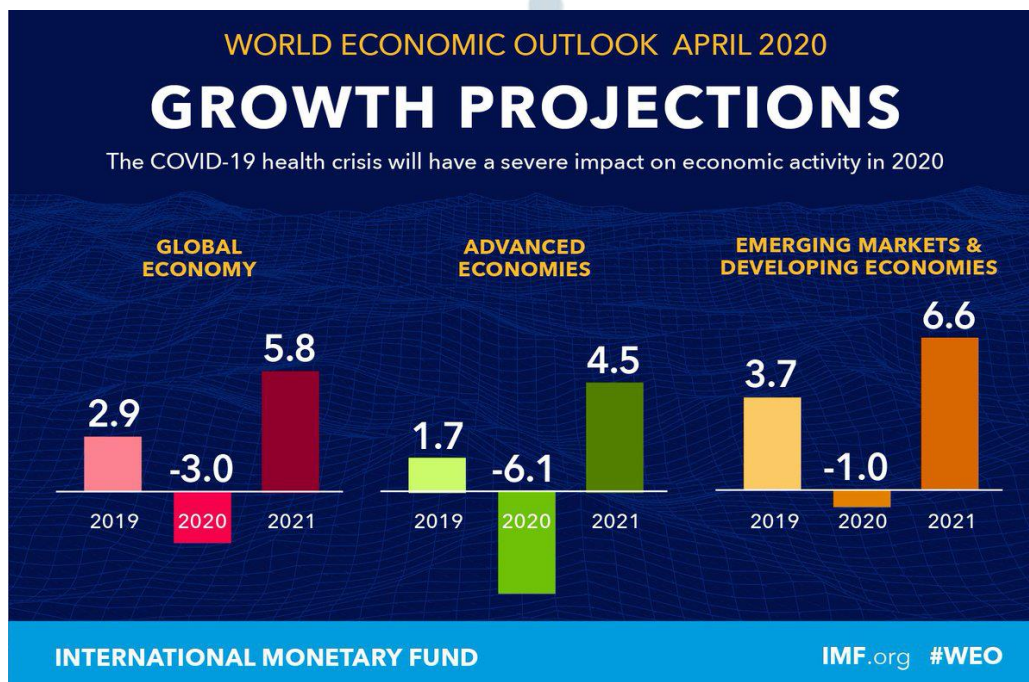
World Economic Outlook (WEO), April 2020:

- India's growth is expected to dip to 1.9% in 2020 and rebound to 7.4% in 2021.

- Assuming that the pandemic fades in the second half of 2020, the world economy is projected to grow at 5.8% in 2020 as economic activity normalizes, aided by policy.

- If the pandemic does not recede in the second half of 2020, global GDP would fall an additional 3% in 2020 and if the pandemic continues into 2021, global GDP may fall by an additional 8% relative to the baseline scenario.

- The cumulative loss to global GDP over 2020 and 2021 from the pandemic crisis could be around 9 trillion dollars, greater than the economies of Japan and Germany, combined.

Emerging Asia:

- Emerging Asia is projected to be the only region that grows in 2020, at a rate of 1.0%.
- Apart from India's modest 1.9% in 2020, Indonesia is expected to grow at 0.5%, while others in the region experience contractions.

Factors of Economic Impact of the Disease:
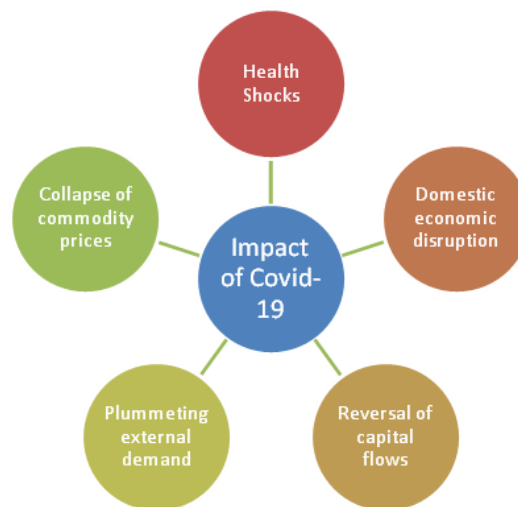
- The economic impact of the disease depends on a number of factors and their unpredictable interaction, including the pandemic's pathway, the intensity and effectiveness of containment efforts, supply chain disruptions, spending pattern changes, behavioural changes (for example around people visiting shopping malls and public transport use), significant tightening of global financial market conditions and so forth.

Way Forward:

- The IMF called on policymakers to make targeted fiscal, monetary and financial sector interventions to support impacted households and businesses.
- Fiscal measures should be two-fold, cushioning the impact on the most-exposed households and businesses, and reducing firm closures, i.e., preserving economic relationships.
- Fiscal support will need scaling up, if activity does not pick up sufficiently once restrictions are lifted or if economic activity stoppages are persistent.
- Monetary stimulus by large central banks and liquidity facilities to reduce systemic stress would be required to limit the shock, positioning the economy for a better recovery.

- Further Strong multilateral cooperation is essential to overcome the effects of the pandemic, including to help financially constrained countries facing twin health and funding shocks, and for channelling aid to countries with weak healthcare systems.

9. Targeted Long Term Repo Operations

Why in News?

- The Reserve Bank of India (RBI) recently introduced the Targeted Long Term Repo Operations (TLTROs), as a tool to enhance liquidity in the system, particularly the corporate bond market, in the wake of the COVID-19 crisis.

LTRO:

- It is a tool under which the central bank provides one-year to three-year money to banks at the prevailing repo rate, accepting government securities with matching or higher tenure as the collateral.
- While the RBI's current windows of liquidity adjustment facility (LAF) and marginal standing facility (MSF) offer banks money for their immediate needs ranging from 1-28 days, the LTRO supplies them with liquidity for their 1- to 3-year needs.
- LTRO operations are intended to prevent short-term interest rates in the market from drifting a long way away from the policy rate, which is the repo rate.

Significance:

- As banks get long-term funds at lower rates, their cost of funds falls. In turn, they reduce interest rates for borrowers.
- LTRO helped RBI ensure that banks reduce their marginal cost of funds-based lending rate, without reducing policy rates.
- LTRO also showed the market that RBI will not only rely on revising repo rates and conducting open market operations for its monetary policy, but also use new tools to achieve its intended objectives.

10. Outdated census data deprives over 10 crores of PDS

Why in News?

- Over 10 crore people have been excluded from the Public Distribution System (PDS) because outdated 2011 census data is being used to calculate State-wise National Food Security Act (NFSA) coverage.
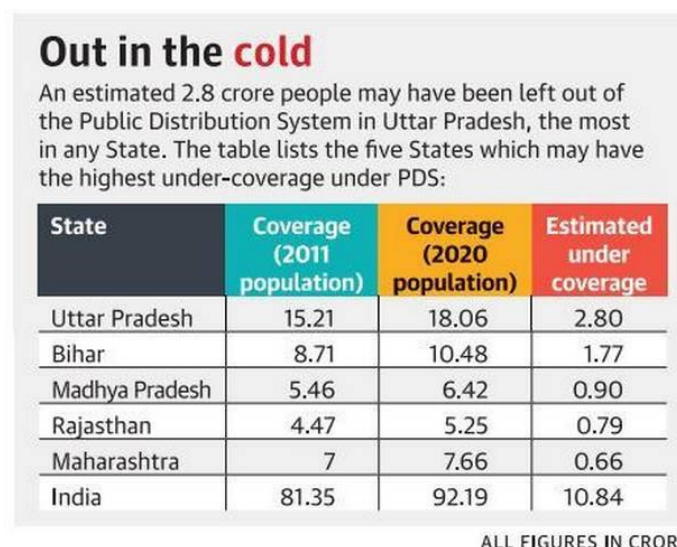
- With the 2021 census process being delayed due to the COVID-19 pandemic, any proposed revision of PDS coverage using that data could now take several years.

Highlights:

- National Food Security Act (NFSA), 2013 gives legal entitlement to 67% of the population (75% in rural areas and 50% in urban areas) to receive highly subsidized food grains under the Public Distribution System.

- Coverage under the Act is based on the population figures of Census, 2011.

- Under the Act, food grain is allocated @ 5 kg per person per month for priority house holds category and @ 35 kg per family per month for Antodya anna Yojna (AAY) families at a highly subsidized prices of Rs. 1/-, Rs. 2/- and Rs. 3/- per kg for nutri-cereals, wheat and rice respectively.

- In 2013, State-wise ratios were worked out for rural and urban areas, using National Sample Survey data, in such a manner that everyone below a given national "per-capita expenditure benchmark" is covered, meaning that PDS coverage should be higher in poorer States.

Population Missed the PDS Coverage:

- Under the NFSA, the PDS is supposed to cover 75% of the population in rural areas and 50% of the population in urban areas, which works out to 67% of the total population, using the rural-urban population ratio in 2011.

- India's population was about 121 crore in 2011 and so PDS covered approximately 80 crore people. However, applying the 67% ratio to a projected population of 137 crore for 2020, PDS coverage today should be around 92 crore.

Out in the cold

An estimated 2.8 crore people may have been left out of the Public Distribution System in Uttar Pradesh, the most in any State. The table lists the five States which may have the highest under-coverage under PDS:

| State	Coverage (2011 population)	Coverage (2020 population)	Estimated under coverage
Uttar Pradesh	15.21	18.06	2.80
Bihar	8.71	10.48	1.77
Madhya Pradesh	5.46	6.42	0.90
Rajasthan	4.47	5.25	0.79
Maharashtra	7	7.66	0.66
India	81.35	92.19	10.84

ALL FIGURES IN CRORE

- The biggest gaps are in Uttar Pradesh (2.8 crore) followed by Bihar (1.8 crore) people. State-specific birth and death rates from 2016 were used to calculate the population growth rate and projected population estimates.
- Many State governments are reluctant to issue new ration cards beyond the numbers that will be provided for by the Central quota, making it difficult to reduce exclusion errors in the PDS.
- This is because the State government stopped issuing new ration cards several years ago to avoid exceeding the numbers provided for by the Central Government.

Public Distribution System:

- It is a government-sponsored chain of shops entrusted with the work of distributing basic food and non-food commodities to the needy sections of the society at very cheap prices.
- Wheat, rice, kerosene, sugar, etc. are a few major commodities distributed by the public distribution system.
- Food Corporation of India, a government entity, manages the public distribution system.
- Concerns: The system is often blamed for its inefficiency and rural-urban bias.
- It has not been able to fulfill the objective for which it was formed. Moreover, it has frequently been criticized for instances of corruption and black marketing.

How PDS System Functions?
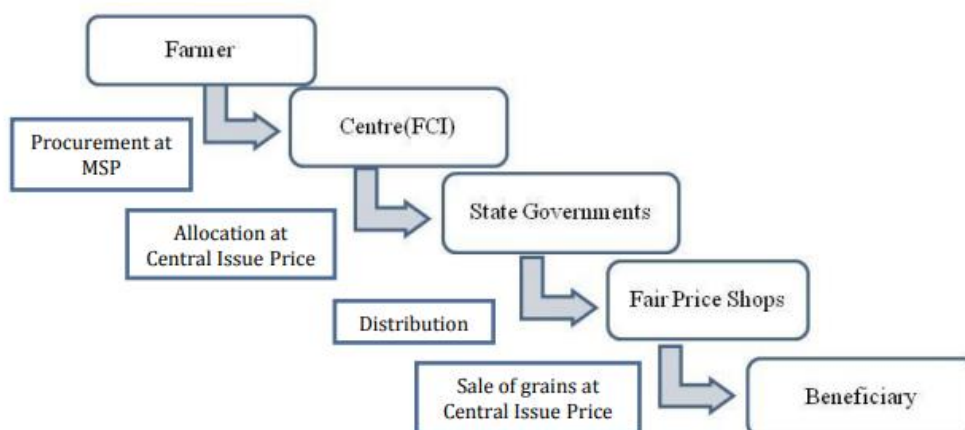
- The Central and State Governments share responsibilities in order to provide food grains to the identified beneficiaries.
- The centre procures food grains from farmers at a minimum support price (MSP) and sells it to states at central issue prices. It is responsible for transporting the grains to godowns in each state.

- States bear the responsibility of transporting food grains from these godowns to each fair price shop (ration shop), where the beneficiary buys the food grains at the lower central issue price. Many states further subsidise the price of food grains before selling it to beneficiaries.

11. Impact of the Coronavirus Pandemic on Aviation Industry

- The aviation industry, like several other sectors, is facing a crisis in the wake of the COVID-19 Pandemic.

Highlights:

- **Issues Faced by the Aviation Industry due to COVID-19:** Travel restrictions, grounded fleets, benched staff, schedule uncertainties, ticket liabilities and cash burn. It's not a question of only restrictions, visas not being allowed, travel not being allowed, airlines not being allowed.

- Even after upliftment of restrictions there will be apprehensions.

- **Loss incurred by Aviation Industry:** As per The International Air Transport Association (IATA) severe travel restrictions may cut the industry's revenue by $252 billion in 2020.

- In terms of the bottom line, this is expected to translate into a $39 billion net loss in the second quarter.

- The Industry will also burn about $61 billion in money in the second quarter.

- In India, for example, out of the 650 planes with all the airlines, 50% of them have been taken on lease. So even while they're on the ground the lease rentals are being paid.

- If apprehensions and restrictions last much longer, the revenue loss will be higher and, subsequently, the losses will be higher.

- **Loss of livelihood:** As per IATA 25 million people will lose their jobs. Both men and machines are taking a heavy toll on the aviation industry.

- Traffic will not grow for a year or more: for instance, Changi Airport shutting down one complete terminal for a year and Singapore airlines announced the grounding of 96% of their fleet. With respect to India it will take more than a couple of years to come back to at least 50% of what the industry was earlier.

- **No Clue for Future:** The crisis confronting the aviation industry is not only unprecedented but also there is no clue on how to put industry back on track. For instance after the 9/11 terrorist attack it took a long time for the aviation industry to come back.

Implications:

- Social distancing in airlines: the recent statements of the DGCA [Directorate General of Civil Aviation], even when the flights are put back into operation, the concept of social distancing will be imposed on the airlines.

- If airlines are only going to be flying one-third of your capacity, the kind of fares that an airline will have to charge to sustain its operations will be very high.

- Family travel will be seriously impacted by this.

- India is a price-sensitive market: So we will go back to the era of the 1940s and the 1950s where only the elite could afford to travel.

- Limited finances: It is difficult that the government pump in money to push up an elite industry at the cost of others. To expect large-scale aid to put the airline industry back on track is an impossibility. Slowdown in Manufacturing of aircrafts: Manufacturers are going to face a big problem for the next 10 years. It's 10 years because of finances to build up, for airlines to place the order. the industry is not going to start reviving before five years.

Way Forward:

- It needs professionals with a clear mind, not bureaucrats who know very less about aviation. A clear Plan on how to mitigate the suffering is the need of the hour.

- Aviation research agency CAPA predicts that airlines will need three stages of relief. CAPA has also said that 250 aircraft will be surplus to needs. As per estimates India will not need even 50% of the 650 planes that all airlines currently have.

- **Radical changes in Business Models:** The business model that Indian carriers followed is garner market share at the expense of profitability, which in other words was no business model at all.

- **There is really no low-cost Airline:** The first thing the government can do is to put the Aviation Turbine Fuel, or ATF, in GST.

- **Rebuild Aviation:** Move slowly, understand where the flights are essential and move away from fixing the schedules based on a Delhi-centric focus and politicians.

IATA:

- The International Air Transport Association is a trade association of the world's airlines founded in 1945.

- IATA has been described as a cartel since, in addition to setting technical standards for airlines, IATA also organizes tariff conferences that serve as a forum for price fixing.

- IATA supports airline activity and helps formulate industry policy and standards.
- It is headquartered in Canada in the city of Montréal, with Executive Offices in Geneva, Switzerland.
- IATA's mission is to represent, lead, and serve the Airline Industry.
- Its members include both freight and passenger carriers and it has offices in 53 countries around the world.
- The organisation offers information on airlines, a range of publications and training programs and accreditation for those working in the travel industry.
- In addition, it supplies a range of financial services, such as a debt collection service for airlines. The main instrument for safety is the IATA Operational Safety Audit (IOSA). IOSA has also been mandated at the state level by several countries. In 2017, aviation posted its safest year ever, surpassing the previous record set in 2012.

12. RBI Announces Second Set of Liquidity Measures

Why in News?

- The Reserve Bank of India (RBI) has announced the second set of measures to preserve financial stability and help put money in the hands of the needy and disadvantaged during the extended lockdown due to the COVID-19 crisis.

Highlights:

- The Reserve Bank of India announced a set of nine measures to revive the struggling domestic economy. This follows the earlier set of measures announced by RBI.
- Making the announcements through an online address, the RBI Governor stated that the human spirit is ignited by the resolve to overcome the COVID-19 pandemic which has gripped the world in its deadly embrace.
- The move by the Central Bank aims to maintain adequate liquidity in the system and its constituents in the face of COVID-19 related dislocations, facilitate and incentivize bank credit flows, ease financial stress, and enable the normal functioning of markets.

Measures Announced by RBI:

- **Targeted Long-Term Operations (TLTRO) 2.0:**
  - ✓ A second set of targeted long-term repo operations (TLTRO 2.0) for an initial aggregate amount of Rs. 50,000 crore will be conducted.

- This is being done to facilitate funds flow to small and mid-sized corporates, including NBFCs and MFIs, who have been more severely impacted by the disruptions due to COVID-19.

- **Refinancing Facilities for All India Financial Institutions**
  - Special refinance facilities for a total amount of Rs. 50,000 crore will be provided to National Bank for Agriculture and Rural Development (NABARD), the Small Industries Development Bank of India (SIDBI) and the National Housing Bank (NHB) to enable them to meet sectoral credit needs.

- **Reduction of Reverse Repo Rate under Liquidity Adjustment Facility**
  - Reverse repo rate has been reduced by 25 basis points from 4.0% to 3.75% with immediate effect, in order to encourage banks to deploy surplus funds in investments and loans in productive sectors of the economy.

- **Raising Limit of Ways and Means Advances of states and UTs**
  - Ways and Means Advances (WMAs) Limit of states and union territories has been increased by 60% over and above the limit as on March 31, 2020, in order to provide greater comfort to states for undertaking COVID-19 containment and mitigation efforts, and also to help them plan their market borrowing programmes better.

- **Asset Classification**
  - With respect to recognition of Non-Performing Assets (NPAs), the central bank has decided that the payment moratorium period, which lending institutions have been permitted to grant as per RBI's announcement (on March 27, 2020), will not be considered while classifying assets as NPAs.

- **Extension of Resolution Timeline**
  - Recognizing challenges to resolution of stressed assets or accounts which are or are likely to become NPAs, the period for implementation of resolution plan has been extended by 90 days.

- **Distribution of Dividend**
  - It has been decided that scheduled commercial banks and cooperative banks shall not make any further dividend pay-outs from profits pertaining to FY 2019-20.
  - This has been done in order to enable banks to conserve capital so that they can retain their capacity to support the economy and absorb losses in an environment of heightened uncertainty.

- **Lowering of Liquidity Coverage Ratio Requirement**
  - ✓ To improve the liquidity position for individual institutions, the Liquidity Coverage Ratio requirement for scheduled commercial banks has been brought down from 100% to 80% with immediate effect.
- **NBFC Loans to Commercial Real Estate Projects**
  - ✓ The treatment available for loans to commercial real estate projects with respect to the date for commencement for commercial operations (DCCO) has been extended to NBFCs, in order to provide relief to both NBFCs and the real estate sector.
- **The Additional Measures are Aimed to:**
  - ✓ Maintain adequate liquidity in the system and its constituents in the face of COVID-19 related dislocations
  - ✓ facilitate and incentivise bank credit flows
  - ✓ Ease financial stress, and
  - ✓ Enable the Normal Functioning of Markets

13. Effect of Pandemic on Gold Prices

Why in News?

- Much before Covid-19's impact reverberated across economies and led to a crash in global stock markets, gold prices had started their upward move to culminate into a nearly 40 per cent jump in less than a year.

Highlights:

- The present gold prices in India are even higher, as they jumped from around Rs 32,000 per 10 grams to nearly Rs 46,800 per 10 gram during the same period, a nearly 45 per cent return.
- Since gold is mostly imported commodity into India, the depreciation of the rupee vis-a-vis the US dollar of around 7 per cent since last September pushed the gold prices in India even higher.
- There have been intermittent reports based on economic indicators suggesting that the US economy could enter into recession after a record 11 years of economic surge since the global financial crisis of 2008.
- This expectation of recession sowed the seeds of the gold rally, and the Covid-19 impact, which has virtually led to a shutdown of major economies across the world, added momentum to the rising gold prices as a major global recession now looks certain.

- Apart from this, major gold buying leading central banks of China and Russia over the last two years supported higher gold prices. While gold by itself does not produce any economic value, it is an efficient tool to hedge against inflation and economic uncertainties. It is also more liquid when compared with real estate and many debt instruments which come with a lock-in period.

- The empirical findings suggest that gold prices fall with a rise in equity prices. Gold prices also move in tandem with heightened economic policy uncertainty, thereby indicating the safe haven feature of the asset.

- Given the economic uncertainty, gold is expected to touch a new all time high, which will be over $1900 an ounce. In India, the prices will also be supported by any further weakness in the Indian rupee.

- As an when economic recovery picks up pace, which is now expected in late 2021 only, investors will start allocating more funds to risk assets like stocks, real estate and bonds and pull out money from safe havens such as gold, US dollar, government debt and Japanese yen.

- As per historical trends, when equity and risk assets start an upward trend, gold typically falls significantly as was the case from 2011 till 2015.

14. Software Technology Parks of India (STPI)

Why in News?

- Government of India gives 4 months' rental waiver to the IT companies operating from Software Technology Parks of India (STPI) centres.

- In light of the current coronavirus pandemic, the Ministry of Electronics and Information Technology (MeitY) has decided to provide rental waiver to IT companies housed in STPI premises in the country from March to June, i.e., for 4 months period as of now.

Software Technology Parks of India (STPI):

- Software Technology Parks of India (STPI) is an autonomous society under the Ministry of Electronics & Information Technology, Government of India.

- It was established in 1991 with the objective of encouraging, promoting and boosting the export of software from India.

- STPI maintains internal engineering resources to provide consulting, training and implementation services.

- Services cover Network Design, System Integration, Installation, Operations and maintenance of application networks and facilities in varied areas.
- The STPI's major functions are to establish software technology parks in various locations in India, and to perform various financial management functions related to it.
- It has **60 centres** across India. The STPI's Governing Council's Chairperson is the Union Minister for Electronics & Information Technology.

STPI Objectives:

- To promote the development and export of software and software services including Information Technology Enabled Services/Bio-IT.
- To provide statutory and other promotional services to the exporters by implementing Software Technology Park/Electronics and Hardware Technology Park Schemes and other such schemes which may be formulated and entrusted by the Government from time to time.
- To provide data communication services including value added services to IT/IT Enabled Services related industries.
- To promote micro, small and medium entrepreneurs by creating conducive environment for entrepreneurship in the field of IT/IT Enabled Services.

15. How COVID-19 unsettled Rupee

Why in News?

- The economic disruption due to the spread of the COVID-19 over the past few months has adversely affected various aspects of the Indian economy which can be assessed using multiple parameters including the exchange rate viz a viz other economy.

Exchange Rate:

- A currency's exchange rate vis-a-vis another currency reflects the relative demand among the holders of the two currencies.
- This is dependent on the relative demand for the goods and services of the two countries.
- If the US dollar is stronger than the rupee, then it shows that the demand for dollars (by those holding rupee) is more than the demand for rupees (by those holding dollars)

Current Scenario:

- Typically, stronger economies have stronger currencies.
- For instance, the US economy is relatively stronger than India's and this is reflected in one US dollar being equal to around 76 rupees.

- The rupee has been losing value (or depreciating or weakening) against the dollar over the past few months.
- But the US is not the only other country in the world; India trades with many other countries.
- To have a better understanding of the Indian economy's overall competitiveness, one should look at how the rupee is behaving with its major trade partners.

NOMINAL & REAL EFFECTIVE EXCHANGE RATES

Source: RBI
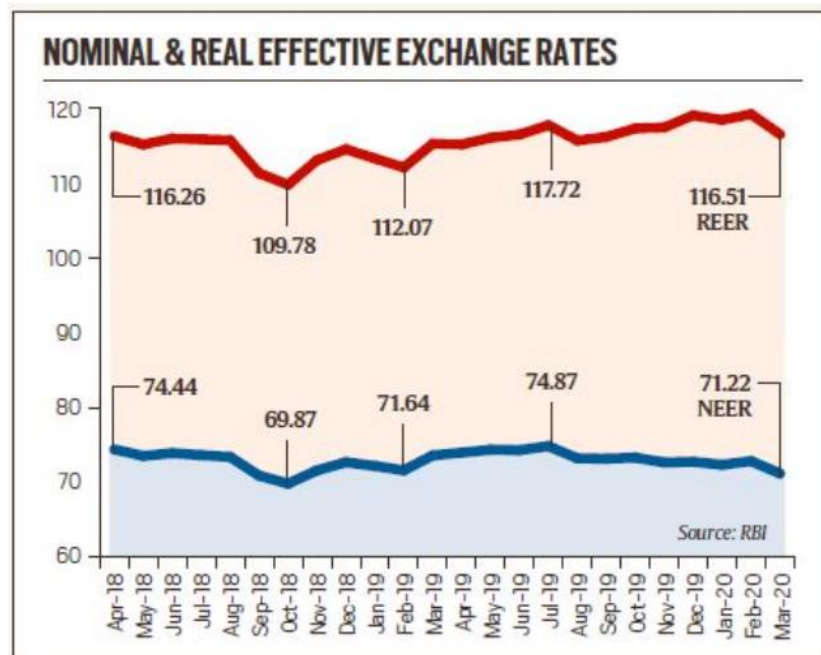
Parameters to Measure Exchange Rate Competitiveness of Indian Economy:

- **Nominal Effective Exchange Rate:** The Reserve Bank of India tabulates the rupee's NEER in relation to the currencies of 36 trading partner countries.
  - ✓ This is a weighted index — that is, countries with which India trades more are given a greater weight in the index.
  - ✓ A decrease in this index denotes depreciation in rupee's value; an increase reflects appreciation.
- **Changes Observed:**
  - ✓ In NEER terms, the rupee has depreciated to its lowest level since November 2018.
  - ✓ The rupee has been steadily losing value — showing the Indian economy's reducing competitiveness— since July 2019.
  - ✓ The dip in March was likely influenced by the net outflow of foreign portfolio investments from the Indian equity and debt markets — they stood at $15.92 billion in March as against net inflows of $1.27 billion in February.

- **Real Effective Exchange Rate (REER):** This is even better at capturing the actual change is essentially an improvement over the NEER because it also takes into account the domestic inflation in the various economies.
  - ✓ Many factors affect the exchange rate between any two currencies ranging from the interest rates to political stability (less of either result in a weaker currency). Inflation is one of the most important factors.
- **REER calculates** the purchasing power of a currency by adjusting the nominal exchange rate for inflation effects.
  - ✓ Illustration - Suppose Rupee - Dollar exchange rate was exactly 10 in the first year.
  - ✓ This means that with Rs 1000, one could buy something that was priced at $100 in the US. But suppose the Indian inflation is 20% and the US inflation is zero. Then, in the second year, an Indian would need Rs 1200 to buy the same item priced at $100, and the rupee's exchange rate would depreciate to 12.
- **Changes Observed:**
  - ✓ Even in REER terms, the rupee has depreciated in March and fallen to its lowest level since September 2019.
  - ✓ As the graph shows, the difference between trends of NEER and REER was due to India's domestic retail inflation being lower relative to the other 36 countries.
  - ✓ As domestic inflation started rising, the REER, too, started depreciating like the NEER.

16. Advisory Council of the 15th Finance Commission

Why in News?

- The Economic Advisory Council of the Fifteenth Finance Commission will meet on 23-24 April, 2020.

Highlights:

- It will be an online meeting presided by the Chairman of the 15th Finance Commission and attended by all the Members and Senior Officials of the Finance Commission.
- The meeting will be attended by the 5 Members of the Council.
- **The likely agenda for the Advisory Council Meeting is:**
  - ✓ Implications of the pandemic for GDP growth in 2020-21 and 2021-22. Uncertainty about macro variables over time.
  - ✓ Possible assumptions for tax buoyancy and revenue in the current year and next year.

✓ What should be the public expenditure fillip to shore up the Economy.

Finance Commission:

- The Finance Commission is a Constitutionally mandated body that is at the centre of fiscal federalism.

- Set up under Article 280 of the Constitution, its core responsibility is

- to evaluate the state of finances of the Union and State Governments,

- recommend the sharing of taxes between them,

- lay down the principles determining the distribution of these taxes among States.

- Its working is characterised by extensive and intensive consultations with all levels of governments, thus strengthening the principle of cooperative federalism.

- Its recommendations are also geared towards improving the quality of public spending and promoting fiscal stability.

- The first Finance Commission was set up in 1951 and there have been fifteen so far. Each of them has faced its own unique set of challenges.

17. Nutrient Based Subsidy (NBS) Rates and its Fixation

Why in News?

- Union Cabinet has approved fixation of Nutrient Based Subsidy (NBS) rates for Phosphatic and Potassic (P&K) fertilizers for the year 2020-21.

Nutrient Based Subsidy (NBS) Scheme:

- The NBS Scheme for fertilizer was initiated in the year 2010 and is being implemented by the Department of Fertilizers.

- Government is making available fertilizers, Urea and 21 grades of P&K fertilizers to farmers at subsidized prices through fertilizer manufacturers/importers.

What NBS Provides?

- The scheme allows the manufacturers, marketers, and importers to fix the MRP of the Phosphatic and Potash fertilizers at reasonable levels.

- The MRP will be decided considering the domestic and international prices of P&K fertilizers, inventory level in the country and the exchange rates.

- The NBS ensures that adequate quantity of P&K is made available to the farmers at a statutory Controlled Price.

Fertilizers Covered:

- Under this, a fixed amount of subsidy decided on an annual basis is provided on each grade of subsidized Phosphatic and Potassic (P&K) fertilizers, except for Urea based on the nutrient content present in them.
- It is largely for secondary nutrients like N, P, S and K and micronutrients which are very important for crop growth and development.
- In India, urea is the only controlled fertilizer and is sold at a statutory notified uniform sale price.

18. Department of Agricultural Research & Education (DARE)

Why in News?

- The Union Minister for Agriculture took a review meeting of the Department of Agricultural Research & Education (DARE) and Indian Council of Agricultural Research (ICAR).

Department of Agricultural Research & Education (DARE):

- It was established in the Ministry of Agriculture in December, 1973.
- It coordinates agricultural research & education in the country.
- It is the nodal agency for International Cooperation in the area of agricultural research and education in India.
- It has the following four autonomous bodies under its administrative control:
  - ✓ Indian Council of Agricultural Research (ICAR)
  - ✓ Central Agricultural University (CAU), Imphal
  - ✓ Dr Rajendra Prasad Central Agricultural University, Pusa, Bihar
  - ✓ Rani Laxmi Bai Central Agricultural University, Jhansi, UP

The Major Functions of DARE:

- To look after all aspects of the agricultural research and Education involving coordination between the central and state agencies.
- To attend all matters relating to Indian Council of Agricultural Research (ICAR).
- To attend all matters concerning the development of new technology in agriculture, horticulture, natural resources management, animal science and marketing and fisheries.
- International co-operation in the field of agricultural research and education.

- Fundamental, applied and operational research and higher education including co-ordination of such research.

Krishi Kalyan Abhiyan:

- It was launched by the Ministry of Agriculture and farmers' welfare in June 2018 to assist and advice farmers on how to improve their farming techniques and raise their incomes.

Implementation:

- It is undertaken in 25 Villages with more than 1000 population each in Aspirational Districts identified in consultation with Ministry of Rural Development as per directions of NITI Ayog.

- In districts where number of villages (with more than 1000 population) is less than 25, all villages will be covered.

3 Phases of KVKs:

- So far two phases of Krishi Kalyan Abhiyan have been completed in which 11.05 lakh farmers were trained by KVKs.

- In the third phase of KKA training of about 17 lakh farmers on diversified farming practices for doubling farmers' income is planned.

19. Facebook -Reliance Jio deal significance

Why in News?

- Facebook's purchase of a nearly 10% stake in Reliance Industries' digital business unit Jio Platforms brings one of the world's largest Internet companies on the table with India's largest telecom player.

Highlights:

- The deal pushes the Indian conglomerate ahead in its plans of de-leveraging its balance sheet while accelerating the launch of its new commerce business.

- This not only marks Facebook's long-pending formal entry into India's telecom sector but also catapults it to a place among the biggest foreign investors in India's technology space.

- Reliance Industries Chairman Mukesh Ambani had said the group had prepared a roadmap for becoming a zero net-debt company within 18 months.

- The Facebook deal significantly contributes to that plan by paring about Rs 43,574 crore from its outstanding debt as of September 2019 of Rs 2.92 lakh crore.

- The other primary contributors to the debt-reduction plan will be a potential $15 billion (around Rs 1.05 lakh crore) deal with Saudi Aramco for a 20% stake in Reliance Industries' refining and petrochemicals business and Rs 7,000 crore from a 49% sale in its fuel retail joint-venture to British firm BP.

- Experts have said the arrangement among Reliance Retail, Jio Platforms and Facebook-owned WhatsApp to offer consumers the ability to access the nearest kiranas, or grocery stores.

- This can provide products and services to their homes by transacting with JioMart using WhatsApp and has come at a very opportune time. WhatsApp boasts 400 million users in India. Further, using WhatsApp's base also allows Reliance Retail to promote its services to users of Jio's rival telecom players.

- The partnership with Reliance could also help Facebook navigate the regulatory environment in India, where it has had several skirmishes with the authorities, including for its major initiatives such as WhatsApp Pay.

- The deal also marks Facebook's entry among elite investors in India's technology space, joining the likes of SoftBank, Amazon and Google that have together poured in billions of dollars in Indian tech startups and their own ventures over the years.

- Prior to Jio Platforms, Facebook had invested around $20-25 million in social commerce platform Meesho in 2019, and participated in a $110 million funding round for edu-tech company Unacademy earlier this year.

20. To Print more Money, or Not to

Why in News?

- Reserve Bank of India (RBI) has been trying to boost the liquidity in the financial system. It has bought government bonds from the financial system and left it with money amid COVID 19.

Need for Government to Borrow:

- Under normal circumstances, just because the economy has stalled and the government will not be getting its revenues, the government fiscal deficit is expected to shoot up to around 15% of GDP when the permissible limit is only 6%.

- Also, if the government was to provide some kind of a bailout or relief package, it would have to borrow a huge amount. The fiscal deficit will go through the roof.
- Moreover, for the government to borrow the money, the market should have it as savings. Data show that savings of domestic households are barely enough to fund the government's existing borrowing needs. So there isn't enough money in the market for the government to borrow.

Direct Monetisation of Deficit:

- In this, government deals with the RBI directly and asks it to print new currency.
- In lieu of printing this cash, which is a liability for the RBI, it gets government bonds, which are an asset for the RBI since such bonds carry the government's promise to pay back the designated sum at a specified date.
- This is different from the indirect monetising that RBI does when it conducts the so-called Open Market Operations (OMOs) and/ or purchases bonds in the secondary market.

Has India Ever Done this in the Past?

- Yes, until 1997, the RBI "automatically" monetised the government's deficit. However, direct monetisation of government deficit has its downsides. In 1994 then RBI Governor decided to end this facility by 1997.

Main problems with Direct Monetisation of Government Deficit:

- Government expenditure using this new money boosts incomes and raises private demand in the economy. Thus, it fuels inflation. A little increase in inflation is healthy as it encourages business activity. But if the government doesn't stop in time, it creates high inflation.
- Since inflation is revealed with a lag, it is often too late before governments realise they have over-borrowed. Higher inflation and higher government debt provide grounds for macroeconomic instability.
- While no ideal level of debt is set in stone, most economists believe developing economies like India should not have debt higher than 80%-90% of the GDP. At present, it is around 70% of GDP in India.
- The other argument against direct monetising is that governments are considered inefficient and corrupt in their spending choices — for example, whom to bail out and to what extent.

21. National Infrastructure Pipeline (NIP)

Why in News?

- The Task Force on National Infrastructure Pipeline (NIP) submitted its Final Report on NIP for FY 2019-25 to the Union Minister for Finance & Corporate Affairs.

Highlights:

- NIP is a first-of-its-kind, whole-of-government exercise to provide world-class infrastructure across the country, and improve the quality of life for all citizens.

- It aims to improve project preparation, attract investments (both domestic and foreign) into infrastructure, and will be crucial for achieving the target of becoming a $5 trillion economy by FY 2025. The NIP has been made on a best effort basis by aggregating the information provided by various stakeholders including line ministries, departments, state governments and private sector across infrastructure sub-sectors identified in the Harmonised Master List of Infrastructure. To draw up the NIP, a bottom-up approach was adopted wherein all projects (Greenfield or Brownfield, Under Implementation or Under Conceptualisation) costing greater than Rs 100 crore per project were sought to be captured. The final report identifies and highlights recent infrastructure trends in India as well as global in all sectors of infrastructure.

- It also captures sector progress, deficits and challenges. In addition to update existing sectoral policies, the Final Report also identifies and highlights a set of reforms to scale up and propel infrastructure investments in various sectors throughout the country.

- The report also has suggested ways and means of financing the NIP through deepening Corporate Bond markets, including those of Municipal Bonds, setting up Development Financial Institutions for infrastructure sector, accelerating Monetisation of Infrastructure Assets, Land monetisation, etc.

- **The Task Force has recommended that three Committees be set up:**
  1. A Committee to monitor NIP progress and eliminate delays;
  2. A Steering Committee in each infrastructure ministry level for following up implementation; and
  3. A Steering Committee in DEA for raising financial resources for the NIP.

- The NIP project database would be hosted on the India Investment Grid (IIG) to provide visibility to the NIP and help in its financing with prospective investors; domestic and foreign, able to access updated project level information.

- Each line Ministry/State would further add new projects and update their respective project details at pre-defined time intervals so that updated data is available to prospective investors.

22. Exemptions to the Farming Community

Why in News?

- To ensure that there is no shortage of food grains in the country during the lockdown period, the Ministry has made certain exemptions to the Farming Community.

Highlights:

- The exemptions made for farming during the lockdown are:
- Farming operations by farmers and farm workers in the field;
- Agencies engaged in procurement of agriculture products, including MSP operations;
- 'Mandis' operated by the Agriculture Produce Market Committee (APMC) or as notified by the State Government;
- Shops and manufacturing/packaging units for Seeds, Fertilizers and Pesticides;

- Intra and inter-state movement of harvesting and sowing related machines like combined harvester and other agriculture/horticulture implements;
- Cold storage and warehousing services;
- Transportation for essential goods;
- Shops of agriculture machinery, its spare parts (including its supply chain) and repairs;
- Custom Hiring Centres (CHC) related to farm Machinery.

1. ICAR issues Advisory to farmers for Rabi crops

Why in News?

- In the wake of COVID-19 spread, ICAR issues Advisory to farmers for Rabi crops.

Highlights:

- Amidst the threat of COVID-19 spread, the Rabi crops are approaching maturity.

- Harvesting and handling of the produce including its movement to the market are inevitable as the agricultural operations are time-bound.

- The ICAR has asked the farmers to follow precautions and safety measures to prevent the disease spread.

- Simple measures include social distancing, maintaining personal hygiene by washing hands with soap, wearing a face mask, protective clothing, and cleaning implements and machinery.

- Workers to follow safety measures and social distancing at each and every step in the entire process of field operations.

ICAR:

- The Indian Council of Agricultural Research (ICAR) is an autonomous organisation under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers' Welfare, Government of India.

- It was established in 1929 as the Imperial Council of Agricultural Research.

- Headquartered in New Delhi, it is the apex body for coordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country.

- With 101 ICAR institutes and 71 agricultural universities spread across the country, this is one of the largest national agricultural systems in the world.

- The ICAR has played a pioneering role in ushering the Green Revolution and subsequent developments in agriculture in India through its research and technology development that has enabled the country to increase the production of food grains by 5.4 times, horticultural crops by 10.1 times, fish by 15.2 times, milk 9.7 times and eggs 48.1 times since 1951 to 2017, thus making a visible impact on the national food and nutritional security.

- It has played a major role in promoting excellence in higher education in agriculture.
- It is engaged in cutting edge areas of science and technology development and its scientists are internationally acknowledged in their fields.

2. India switches to BS VI Norms

Why in News?

- Despite the lockdown, India officially moved to a regime of tighter emission norms for motorised two- and four-wheelers.
- In 2016, the government had said India would directly progress from BS-IV norms to BS-VI, skipping the intermediary stage. Nearly 60,000 crore was spent on the switch-over to BS-VI fuels.

Highlights:

- At fuel stations, only the low-sulphur fuel that complies with Bharat Stage-VI emission norms will be sold and so will cars at stores, whose engines meet the stricter norms.
- As per BS-VI emission norms, petrol vehicles will have to effect a 25% reduction in their NOx, or nitrogen oxide emissions.
- Diesel engines will have to reduce their HC+NOx (hydro carbon + nitrogen oxides) by 43%, their NOx levels by 68% and particulate matter levels by 82%. BS-VI petrol and diesel, which have sulphur content of just 10 parts per million, were set to be costlier by Rs 1/litre each, but state-run oil firms decided to maintain the current prices by adjusting the levy against cheaper crude.
- The emission norms of all models of two-wheelers in India are ahead of Europe (2021) and Japan (2022), and India is the first country to adopt this level of emission norms.

Bharat Stage Emission Norms:

- Bharat stage (BS) emission standards are laid down by the government to regulate the output of air pollutants from internal combustion engine and spark-ignition engine equipment, including motor vehicles.
- The first emission norms were introduced in India in 1991 for petrol and in 1992 for diesel vehicles. Followed these, the catalytic converter became mandatory for petrol vehicles and unleaded petrol was introduced in the market.
- The standards and the timeline for implementation are set by the Central Pollution Control Board under the Ministry of Environment, Forest and Climate Change.

- Compared to the BS4, BS6 emission standards are stricter. Whereas makers use this variation to update their vehicles with new options and safety standards, the biggest modification comes in the permissible emission norms.

3. First-Ever Heatwave in Antarctica

Why in News?

- Researchers from the Australian Antarctic Program revealed that they had recorded temperatures as high as 9.2 degrees Celsius at Casey station in the continent east earlier this year, indicating a heatwave event.

Highlights:

- Heat waves are classified as three consecutive days with both extreme maximum and minimum temperatures. Between January 23 and 26, the station recorded minimum temperatures above zero degrees Celsius and a maximum temperature of 9.2 degrees Celsius.

- Scientists are concerned about the effect that the heat wave could have on Antarctica's ecology, both positive and negative. Most life exists in small ice-free oases in Antarctica, and largely depends on melting snow and ice for their water supply.

- Melted ice flooding can provide additional water to these desert ecosystems, leading to increased growth and reproduction of mosses, lichens, microbes and invertebrates. However excessive flooding can dislodge plants and alter the composition of communities of invertebrates and microbial mats. It is believed that the unusual temperatures were linked to meteorological patterns which occurred in the Southern Hemisphere during the spring and summer of 2019. These patterns were influenced in part by the early break-up of the ozone hole in late 2019, due to rapid warming in the stratosphere.

- Global cooperative efforts being undertaken to repair and eventually close the hole in the ozone layer would help reduce regional shifts in the climate system.

4. Grounding of Planes Affects Dynamical Models of Weather Forecasts

Why in News?

- In the ongoing COVID-19 lockdown, the grounding of the country's civilian aircrafts has deprived key source of weather data that the India Meteorological Department (IMD) uses for its forecasts.

Highlights:

- Data's captured by aircrafts to meteorological agencies:
- **For the Accurate Weather Forecasts:**
  - ✓ Aircraft data about temperature and wind speed in the upper atmosphere is provided to meteorological agencies which is used in the dynamical models.
  - ✓ The dynamical models are run on supercomputers which ultimately give weather forecasts three days, or even two weeks ahead.
- **Identify early developing of thunderstorms or swings in temperatures:**
  - ✓ Inputs from aircraft are important for the dynamical models as it determines the initial conditions for weather models.
  - ✓ This data is also helpful to warn of developing thunderstorms or swings in temperatures that often begin at the heights aircraft traverse.

5. Starving Herons

Why in News?

- Several blue herons were spotted dead by the personnel of Neendakara Coastal police station, Kerala. The autopsy has revealed the cause of death as starvation.

Herons:

- The herons are long-legged freshwater and coastal birds in the family Ardeidae, with 64 globally recognised species.
- The herons are medium- to large-sized birds with long legs and necks.
- They exhibit very little sexual dimorphism in size.

Indian Pond heron:

- The Indian pond heron or paddybird is a small heron.
- It is of Old-World origins, breeding in southern Iran and east to the Indian subcontinent, Burma, and Sri Lanka.
- Pond Heron is the most common species of Heron found in India.
- They have adapted themselves well to live alongside humans and can be seen both in the wilderness and in ponds/ lakes within urban areas.
- IUCN status: Least Concern.

6. Mahua Flowers

Why in News?

- Trading in mahua flowers (Madhuca longifolia) in summers is one of the major sources of livelihood of tribal people in Odisha. However, the lockdown has hurt the trade and disrupted Tribal Economy.

Mahua Flowers:

- Mahua (Madhuca longifolia) is a multipurpose tropical tree mainly cultivated or harvested in the wild in Southern Asia for its edible flowers and oil seeds.

- Mahua is indigenous to India, Sri Lanka, Nepal and Myanmar.

- It is a frost resistant species that can grow in marginal areas of dry tropical and subtropical forests up to an altitude of 1200-1800 m.

- The leaves of Mahua are fed on by the moth Antheraea paphia, which produces tassar silk, a form of wild silk of commercial importance in India.

- They are also fermented to produce the alcoholic drink mahua, a country liquor.

7. Environment Impact Assessment (EIA) Notification 2006

Why in News?

- To address the unprecedented situation arising from the global outbreak of COVID-19, and to ramp up availability or production of various drugs, the Ministry of Environment, Forest and Climate Change has made an amendment to EIA Notification 2006.

Changes made in the EIA Notification,2006:

- All projects or activities in respect of bulk drugs and intermediates, manufactured for addressing various ailments, have been re-categorized from the existing Category 'A' to 'B2' category.

- Projects falling under Category B2 are exempted from requirement of collection of Baseline data, EIA Studies and public consultation.

- Within a period of about two weeks, more than 100 proposals have been received under this category, which are at different levels of decision making by the concerned regulatory authorities in the states.

Impacts:

- **The re-categorization of such Proposals has been done to Facilitate:**
  - ✓ Decentralization of appraisal to State Level so as to fast track the process.
  - ✓ This step of the Government is with a view to help in increasing the availability of the important medicines/drugs in the country within a short span of time.
  - ✓ To ensure expeditious disposal of the proposals within a given time-line, the Ministry has also advised states to use information technology e.g. video conference, considering the fact that in view of the prevailing situation on ground, appraisal of proposals may not be possible through physical meetings.
- This amendment is applicable to all proposals received and the states have also been issued advisories to expeditiously process such proposals.

Environmental Impact Assessment (EIA) in India:

- EIA is a management tool to minimize adverse impacts of developmental projects on the environment and to achieve sustainable development through timely, adequate, corrective and protective mitigation measures.
- The MoEFCC uses EIA Notification 2006 as a major tool for minimizing the adverse impact of rapid industrialization on the environment and for reversing those trends which may lead to climate change in the long run.
- EIA has now been made mandatory under the Environmental (Protection Act, 1986 for 29 categories of developmental activities involving investments of Rs. 50 crores and above.

8. Anthurium

Why in News?

- A women innovator from Thiruvananthapuram, Kerala, has developed ten varieties of Anthurium, a flower with high market value, by cross-pollination.

Anthurium:

- An anthurium is a vast group of beautiful blooming plants available in a wide range of colours. Anthurium is one of the best domestic flowering plants in the world.
- They are decorative as well as purify the surrounding air and remove harmful airborne chemicals like formaldehyde, ammonia, toluene, xylene, and allergens.
- Its importance of removing toxic substances from the air, NASA has placed it in the list of air purifier plants.

- Anthurium has larger economic importance because of its eye-catching and beautiful inflorescence and fetches a good market price.
- Salient features of the Anthurium varieties are
  - ✓ Large beautiful flowers
  - ✓ Different colours of spathe and spadix
  - ✓ Long stalks
  - ✓ Better shelf life
  - ✓ Good market value

9. Atmospheric CO2 can cause cognitive impairment

Why in News?

- Rising atmospheric carbon dioxide (CO2) concentrations will cause urban and indoor levels of the gas to increase, and that may significantly reduce our basic decision-making ability and complex strategic thinking, according to a new study.
- High level cognitive domains like decision-making and planning are especially susceptible to increasing CO2 concentrations.

Highlights:

- By the end of the century, people could be exposed to indoor CO2 levels up to 1400 parts per million--more than three times today's outdoor levels, and well beyond what humans have ever experienced.
- Building ventilation typically modulates CO2 levels in buildings, but there are situations when there are too many people and not enough fresh air to dilute the CO2. They also build up in poorly ventilated spaces over longer periods of time, such as overnight while sleeping in bedrooms. Put simply, when we breathe air with high CO2 levels, the CO2 levels in our blood rise, reducing the amount of oxygen that reaches our brains. Studies show that this can increase sleepiness and anxiety, and impair cognitive function.
- And outdoor CO2 in urban areas is higher than in pristine locations. The CO2 concentrations in buildings are a result of both the gas that is otherwise in equilibrium with the outdoors, but also the CO2 generated by building occupants as they exhale.
- Researchers developed a comprehensive approach that considers predicted future outdoor CO2 concentrations and the impact of localized urban emissions, a model of the relationship between indoor and outdoor CO2 levels and the impact on human cognition.

- They found that if the outdoor CO2 concentrations do rise to 930 ppm, that would nudge the indoor concentrations to a harmful level of 1400 ppm. At this level, some studies have demonstrated compelling evidence for significant cognitive impairment.
- The cognitive impacts of rising CO2 levels represent what scientists call a "direct" effect of the gas' concentration, much like ocean acidification. In both cases, elevated CO2 itself-- not the subsequent warming it also causes--is what triggers harm.

10. World Losing 9% of its Insect Population Every Decade

Why in News?

- Scientists have warned that global insect populations are facing a rapidly accumulating decline in the most extensive analysis to date.
- Researchers shifted through more than 166 long-term surveys carried out across 1,676 sites between 1925 and 2018. The found the number of insects is falling on average 0.92 percent every year, or about 9 percent every decade.

Highlights:

- While the global pattern is one of decline, the rate at which this is happening isn't heterogeneous. It fluctuates over time and geography.
- In some spaces, the study's authors even noticed positive trends, meaning numbers of insects were going up not down.
- Specifically, the results suggest the number of midges, mayflies and other freshwater insects have been increasing on average around 1.08 percent each year.
- The authors cautiously attributed this result to effective water protection policies. The authors found that populations of insects living in tree canopies appear to have remained relatively stable, while flying insects and ground-dwelling insects have experienced some of the sharpest declines.
- The study suggests there can be stark differences between regions, and even between areas that are geographically close to one another. The researchers found that protected sites and those less affected by human activity had lower levels of decline than those most affected by urbanization.
- In general, the steepest declines were recorded in the western and mid-western U.S. states and Europe, where a 2017 study found numbers of flying insects had dropped more than 75 percent in less than 30 years.

- The phrase 'insect Armageddon' has captured the collective attention and shined a spotlight on one of the most numerous and diverse groups of organisms on the planet. Yet, insects are critically understudied.

- The authors call for more comprehensive testing of human pressure and more data from underrepresented parts of the world to address these limitations and gain a broader understanding of trends in Global Ecosystems.

11. NBWL nod for coal mining in Assam elephant reserve

Why in News?

- Amid the countrywide lockdown, the National Board for Wild Life (NBWL) has recommended coal mining in a part of an elephant reserve in Assam.

Highlights:

- The NBWL's Standing Committee discussed a proposal for use of land from the Saleki proposed reserve forest land for a coal mining project by North-Easter Coal Field (NECF), a unit of Coal India Limited.

- Saleki is a part of the Dehing Patkai Elephant Reserve.

Dehing Patkai Wildlife Sanctuary:

- It is located in the Dibrugarh and Tinsukia Districts of Assam.

- It belongs to Assam's wet tropical evergreen forest category.

- It includes the Dehing Patkai Wildlife Sanctuary (declared in 2004) and several reserve forests in Sivasagar, Dibrugarh and Tinsukia districts

- It has three parts: Dirok rainforest, upper Dihing River, and Jeypore.

- It is a deciduous rainforest interspersed with semi-evergreen and lush green flora, the only patch of virgin rainforest in Assam.

- Part of Dehing Patkai Wildlife Sanctuary falls under another elephant reserve named Dibru-Deomali.

- Some of the mammals found here are pig-tailed macaque, hoolock gibbon, capped langur, Asiatic elephant, black panther, tiger, black bear, leopard, clouded leopard, squirrel, and gaur to name only a few.

## 12. Largest Hole in the Ozone Layer is Now Closed

Why in News?

- Recently the EU's Copernicus Atmosphere Monitoring Service (CAMS) announced that a hole in the Arctic ozone layer, believed to be the biggest reported, has closed.

Healed Ozone Hole:

- The ozone hole's closing was because of a phenomenon called the polar vortex, and not because of reduced pollution levels due to Covid-19 lockdowns around the world.
- The hole in the North Pole's ozone layer, which was first detected in February, had since reached a maximum extension of around 1 million sq km.

Ozone hole:
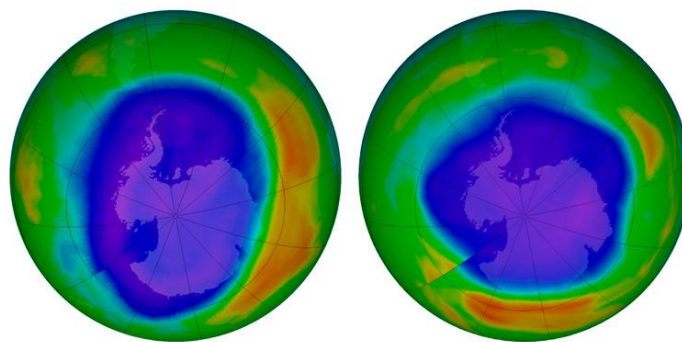
- The 'ozone hole' is not really a hole — it refers to a region in the stratosphere where the concentration of ozone becomes extremely low in certain months.
- Ozone, made up of three oxygen atoms, occurs naturally in small amounts.
- Roughly 10 km to 40 km up in the atmosphere (the layer called the stratosphere), the ozone layer is sunscreen, shielding Earth from harmful ultraviolet radiation.
- Manufactured chemicals deplete the ozone layer. Each spring over Antarctica (it now springs there), atmospheric ozone is destroyed by chemical processes.
- This creates the ozone hole, which occurs because of special meteorological and chemical conditions that exist in that region.

The Importance of the Ozone Layer:

- Ozone (chemically O3, a molecule of three oxygen atoms) is found mainly in the upper atmosphere, an area called the stratosphere, between 10 and 50 km from the earth's surface.

- Though it is talked of as a layer, ozone is present in the atmosphere in rather low concentrations.
- Even at places where this layer is thickest, there are not more than a few molecules of ozone for every million air molecules.
- They perform a very important function. By absorbing the harmful ultraviolet radiations from the sun, the ozone molecules eliminate a big threat to life forms on earth.
- UV rays can cause skin cancer and other diseases and deformities in plants and animals.

Massive Hole:

- This year, the ozone depletion over the Arctic was much larger.
- Scientists believe that unusual atmospheric conditions, including freezing temperatures in the stratosphere, were responsible.
- Cold temperatures (below -80°C), sunlight, wind fields and substances such as chlorofluorocarbons (CFCs) were responsible for the degradation of the Arctic ozone layer.
- Although Arctic temperatures do not usually fall as low as in Antarctica, this year, powerful winds flowing around the North Pole trapped cold air within what is known as the polar vortex. By the end of the polar winter, the first sunlight over the North Pole initiated this unusually strong ozone depletion—causing the hole to form.

How Long it will take for Complete Recovery?

- As per the Scientific Assessment of Ozone Depletion data of 2018, the ozone layer in parts of the stratosphere has recovered at a rate of 1-3 per cent per decade since 2000.
- At these projected rates, the Northern Hemisphere and mid-latitude ozone is predicted to recover by around 2030, followed by the Southern Hemisphere around 2050, and polar regions by 2060.

13. Giant Herbivores in Arctic to Fight Climate Change

Why in News?

- A team of scientists has come up with a bizarre plan to fill the Arctic with hordes of grazing animals like reindeer and bison. The idea is to keep the permafrost frozen by trampling it under the weight of these hordes.
- Climate change and its harmful impact on the Arctic is not unknown. However, the idea of fighting climate change or global warming with hordes of grazing animals is something unheard of before.

Highlights:

- As per the team of scientists, this trick alone could save 80 percent of the Arctic's permafrost until the year 2100. The sounding reason behind this lies in the equation between the snow and the soil.

- In the Arctic, the snow that falls on the ground starts acting as a layer of insulation between the soil and the frigid air above it.

- The idea is that restoring large herds of animals to the Arctic landscape could help protect permafrost, a carbon-rich layer of permanently frozen soil stretching across much of the tundra. As temperatures rise in the rapidly warming Arctic, large swaths of permafrost are beginning to heat up and melt, releasing climate-warming carbon emissions in the process.

- Due to worsening climate change, that insulation results in the soil's temperature to rise. Beyond a point, this temperature rise eventually results in the permafrost beginning to thaw. The study mentions that large herbivores like bisons and reindeers disperse the snow insulation as they walk around. In addition, these animals also help stamp down and compact the soil beneath them.

- There are, however, still doubts on the feasibility of the study. A simple question that renders it impractical is the scale at which it would have to be applied to attain any significant results.

- The increasing climate change is headed towards tipping the Earth to a point of no return. The impact can be seen at almost every point on the planet.

- The arctic, for instance, was recently found with a 1 million square kilometre wide hole in the Ozone layer. Usually, such occurrences were limited to the South Pole.

14. No Improvement in Ganga Water Quality during Lockdown Period

Why in News?

- According to a report by the Central Pollution Control Board (CPCB), The nationwide lockdown may have dramatically reduced air pollution levels across the country but it hasn't significantly reduced pollution in the Ganga river.

Highlights:

- **Marginal Reduction in BOD (Biological Oxygen Demand):**
  - ✓ This reduction has been less significant owing to continual discharge of untreated or inadequately treated sewage.

- ✓ Marginal reduction can be seen only during the 4th week of the lockdown.
- ✓ Also there is a gradual increase in BOD levels towards downstream stretches of the river, with the maximum values in West Bengal.

- **Marginal Reduction in COD (Chemical Oxygen Demand):**
  - ✓ Reduction in COD concentration levels has also been less significant.
  - ✓ Few locations show increase in the COD values, while in remaining stations reduction in COD levels was not significant.
  - ✓ This marginal reduction in COD (Chemical Oxygen Demand) can be attributed due to the stoppage of industrial activities.

- **Marginal Increase in Dissolved Oxygen (DO) Concentration:**
  - ✓ The dissolved oxygen (DO) concentration levels "rose marginally" from March 22-April 15.
  - ✓ A high dissolved oxygen (DO) value is considered a good indicator of river health.

- **Highest Pollution Levels in U.P:**
  - ✓ According to the report by CPCB the pollution in the river is highest in Uttar Pradesh.
  - ✓ The bulk of the sewage treatment plants commissioned under Ganga are in Uttar Pradesh towns, however a noticeable increase in the cleanliness of the river isn't yet apparent.

- **Notable Improvement in water quality in the Yamuna:**
  - ✓ Analysis of the results indicate there is considerable improvement in the water quality of river Yamuna with respect to DO, BOD and COD when compared with pre-lockdown and lockdown period.

National Mission for Clean Ganga:

- The National Mission for Clean Ganga (NMCG) was implemented by the National Council for Rejuvenation, Protection and Management of River Ganga also known as the National Ganga Council.
- This mission was established in 12th August 2011 under the Societies Registration Act,1860 as a registered society.
- The National Mission for Clean Ganga (NMCG) under National Ganga Council is supported by the State level Programme Management Groups (SPMGs) in the state of Uttar Pradesh, Uttarakhand, Bihar, Jharkhand and West Bengal. It is an initiative taken by the Government of India to address the pollution of river Ganga by providing financial and Technical Assistance.

Initiatives towards Clean Ganga:

- A lot of initiatives were taken before the establishment of the Clean Ganga Mission that targeted towards the reduction of pollution and cleaning of the river Ganga. Some of the major initiatives taken by the Government of India before the implementation of this mission are discussed below:
  - ✓ **Ganga Action Plan:** It was announced in 1985 by the Ministry of Environment & Forests. This was the first River Action Plan that was introduced for the improvement of water quality through interception, diversion and treatment of domestic sewage. The plan aimed in preventing the entry of toxic and industrial chemical wastes to the river.
  - ✓ **National River Conservation Plan:** This conservation plan was developed as an extension for the Ganga Action Plan with an aim to cover all the major rivers of India.
  - ✓ **National River Ganga Basin Authority (NRGBA):** Controlled by the Prime Minister of India, the National River Ganga Basin Authority was formed under Section-3 of the Environment Protection Act, 1986 by the Central Government in 2009. It declared the Ganga as the 'National River' of India.
  - ✓ A Government clean-up campaign was started in 2010 to prevent the entry of untreated municipal sewage or industrial runoff into the river.

Namami Gange:

- The Namami Gange Yojana is implemented by the National Mission for Clean Ganga along with its State Programme Management Groups (SPMGs). Union Finance Minister, Arun Jaitley announced the implementation of Namami Gange on 10 July 2014.

- This programme was established as a conservation mission with a budget of Rs. 20,000 crore. Namami Gange aims at reducing the pollution of the river Ganga along with the conservation and rejuvenation of the river banks.

- It is a flagship programme under the Union Government. The main pillars of the Namami Gange have been discussed below:

  1. Sewerage Treatment Infrastructure & Industrial Effluent Monitoring.
  2. Development of river-front as well as river-surface cleaning.
  3. Bio-Diversity & Afforestation.
  4. Public Awareness.

15. Petersberg Climate Dialogue

Why in News?

- India, along with 30 countries, deliberates on issues of Climate Change in the first ever virtual Petersberg Climate Dialogue.

Petersberg Climate Dialogue:

- The first virtual Climate Dialogue, was the eleventh session of the Petersberg Climate Dialogue.

- This has been hosted by Germany since 2010 to provide a forum for informal high-level political discussions, focusing both on international climate negotiations and the advancement of climate action.

- The virtual XI Petersberg Climate Dialogue was co-chaired by Germany and the United Kingdom, the incoming Presidency of the 26th Conference of Parties (COP 26) to United Nations Framework Convention on Climate Change (UNFCCC).

- The dialogue saw participation from ministers and representatives of about 30 countries.

- The Climate Dialogue was originally an initiative of German Chancellor Angela Merkel.

- It is hosted by the German Federal Ministry for the Environment, Nature Conservation, Building and **Nuclear Safety.**

1. The US Defense Production Act

Why in News?

- US President Donald Trump invoked the Defense (defence) Production Act in order to boost the production of ventilators as part of efforts to deal with the coronavirus outbreak

Highlights:

- According to a WHO report, based on an analysis of over 55,000 laboratory-confirmed patients, 18.6 per cent of the patients with COVID-19 experienced shortness of breath.

- The Defense Production Act, 1950 gives the President the power to mobilise domestic industry so that the supply of essential materials and services is maintained for purposes of national defence. By invoking this Act, the President can require persons, including businesses and corporations, to undertake government contracts so that production and supply are maintained.

- In the present situation, by invoking the Act, Trump has mandated General Motors to manufacture ventilators, considered crucial for those patients who develop breathing difficulties as a result of COVID-19. Amid the coronavirus pandemic, the demand for ventilators has shot up in many countries. Ventilators, also described as "life support", are not required for all COVID-19 patients. But in some patients who develop breathing difficulties due to the infection, their breathing needs to be supported by ventilators.

- However, this is only a temporary measure in most cases, used to treat patients if they suffer from illnesses such as pneumonia, which some COVID-19 patients may develop. By using a ventilator, air is pumped into the lungs of the patients, which allows their body to rest and Recover.

2. SAARC 2.0

Why in News?

- India has shown diplomatic resilience and leadership by forging unity in the neighbourhood in the war against COVID-19.

Highlights:

- A tweet by Prime Minister Narendra Modi resulted in the first-ever virtual summit of SAARC leaders recently.

- In the backdrop of political capital invested by New Delhi in strengthening BIMSTEC and the urging it received recently from Nepal and Sri Lanka to resuscitate SAARC, this conference was quite significant.

SAARC Virtual Meeting and its Outcome:

- All the eight member-states were represented at the video conference — all at the level of head of state or government, except Pakistan.
- South Asian nations agreed to evolve a common strategy to meet the challenge posed by the Covid-19 pandemic.
- India proposed the creation of an emergency fund with an initial contribution of $10 million to halt the onslaught of the disease that has so far claimed nearly 6,000 lives globally.
- Pakistan sought to use the occasion to raise the Kashmir issue, calling for the lifting of embargos on communication in Kashmir to better tackle the spread of Covid-19.
- PM Modi also offered online training for health workers in Saarc countries to scale up skills to beat Covid-19.

Follow up on the Meeting:

- **COVID-19 Emergency Fund:** Within days, all the countries, except Pakistan, contributed to it voluntarily, bringing the total contributions to $18.8 million. However the sum is less but seeing the lesser COVID-19 effect on South Asia, it is justified.
- **Fund operationalised:** It is controlled neither by India nor by the Secretariat. It is learnt that each contributing member-state is responsible for approval and disbursement of funds in response to requests received from others.
- **Implementation:** India is in the lead, with its initial contribution of $10 million. It has received requests for medical equipment, medicines and other supplies from Bhutan, Nepal, Afghanistan, Maldives, Bangladesh and Sri Lanka.
- A follow-up video-conference of senior health officials was arranged on March 26.
- **Significance:** India's imaginative diplomacy has leveraged the crisis to create a new mechanism for workable cooperation.

Challenges:

- **Pakistan's non-cooperation:** Saarc has been in the ICU since 2015, on account of Pakistan's refusal to cooperate in regional connectivity projects, and India's refusal to engage with Pakistan.

- The last SAARC summit was held in 2014 and subsequent summits could not be held in the backdrop of terrorist attacks in Pathankot and Uri.
- **Preference to BIMSTEC:** BIMSTEC has more trade and greater trade potential due to the presence of two important trading partners India and Thailand.
- **BIMSTEC** has better regional connectivity via land and sea.
- **SAARC** adherents maintain that all proposals for cooperation should be routed through the Secretariat and activities should be piloted by the incumbent chair.
- Given what Pakistan has done to harm India's interests since the terrorist attack on the Uri Army base in 2016 and its continuing resistance to cooperation against COVID-19, both New Delhi and its friendly neighbours need to start preparing themselves for SAARC 2.0. India has been developing connectivity with Myanmar, Bangladesh, Thailand. So similarly, it should do in South Asia even if it means bypassing Pakistan.

South Asian Association for Regional Cooperation (SAARC):

- The signing of the SAARC Charter in Dhaka established the SAARC in 1985.
- Its secretariat is in Kathmandu, Nepal.
- **Objectives:** The SAARC seeks to promote the welfare of the peoples of South Asia, strengthen collective self-reliance, promote active collaboration and mutual assistance in various fields, and cooperate with international and regional organizations.
- Eight states—Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.
- Six observers—China, Japan, European Union, Republic of Korea, United States, Iran

3. World Health Organisation - Funding

Why in News?

- US President Donald Trump threatened to freeze US funding to the World Health Organization (WHO), saying the international group had failed on the coronavirus pandemic.

Highlights:

- Trump suggested that the WHO had gone along with Beijing's efforts months ago to under-represent the severity of the outbreak.
- The WHO also serves as a forum for summits and discussions on Health Issues.

Funding:

- **There are Four Kinds of Contributions that make up funding for the WHO.**
  - ✓ Assessed contributions are the dues countries pay in order to be a member of the Organization.
  - ✓ The amount each Member State must pay is calculated relative to the country's wealth and population.
  - ✓ Voluntary contributions come from Member States (in addition to their assessed contribution) or from other partners. They can range from flexible to highly earmarked.
  - ✓ Core voluntary contributions allow less well-funded activities to benefit from a better flow of resources and ease implementation bottlenecks that arise when immediate financing is lacking.
  - ✓ Pandemic Influenza Preparedness (PIP) Contributions were started in 2011 to improve and strengthen the sharing of influenza viruses with human pandemic potential, and to increase the access of developing countries to vaccines and other pandemic related supplies.
- The United States is currently the WHO's biggest contributor, making up 14.67 percent of total funding by providing USD 553.1 million. The US is followed by the Bill & Melinda Gates Foundation forming 9.76 percent or USD 367.7 million.
- The third biggest contributor is the GAVI Vaccine Alliance at **8.39 Percent, with the UK (7.79 percent) and Germany (5.68 percent)** coming fourth and fifth respectively.
- **The Four Next Biggest Donors are International Bodies:**
  1. United Nations Office for the Coordination of Humanitarian Affairs (5.09 percent)
  2. World Bank (3.42 percent),
  3. Rotary International (3.3 percent),
  4. The European Commission (3.3 percent).
- India makes up 0.48 percent of total contributions and China 0.21 percent. The biggest program area where the money is allocated is polio eradication (26.51 percent), followed by increasing access to essential health and nutrition services (12.04 percent), and preventable diseases vaccines (8.89 percent).

WHO:

- The World Health Organization (WHO) is a specialized agency of the United Nations responsible for International Public Health.

- It is part of the U.N. Sustainable Development Group.
- It is headquartered in Geneva, Switzerland, with six semi-autonomous regional offices and 150 field offices worldwide.
- The WHO's broad mandate includes advocating for universal healthcare, monitoring public health risks, coordinating responses to health emergencies, and promoting human health and wellbeing.
- It provides technical assistance to countries, sets international health standards and guidelines, and collects data on global health issues through the World Health Survey. Its flagship publication, the World Health Report, provides expert assessments of global Health Topics and Health Statistics on All Nations.

4. Indian Council for Cultural Relations (ICCR)

Why in News?

- The Indian Council for Cultural Relations (ICCR) celebrates its foundation day on 9th of April.

ICCR in Present World:

- The ICCR was established when there was neither the concept of soft power nor was the term in use.
- Naturally then, the activities were limited in terms of their number and their diverse character as well.
- Majorly, it was about scholarships to foreign students, cultural exchanges involving artistes and youths as also establishing some chairs in some universities, etc.
- Now, in a world where every nation wants to influence and occupy the mind space of the global community and thereby add to its prowess, the ICCR has a major role to play.
- Owing to the limitations of military might which are more obvious; the importance of soft power is increasing.

Indian Council for Cultural Relations:

- The ICCR is an autonomous organisation of the Government of India involved in India's external cultural relations, through cultural exchanges with other countries and their peoples.
- It was founded in 1950 by Maulana Abul Kalam Azad, independent India's first Education Minister.

- **Objectives:**
  - ✓ To actively participate in the formulation and implementation of policies and programmes pertaining to India's external cultural relations.
  - ✓ To foster and strengthen cultural relations and mutual understanding between India and other countries.
  - ✓ To promote cultural exchanges with other countries and people, and to develop relations with nations.

5. G20 Extraordinary Energy Ministers Meeting

Why in News?

- The G20 Energy Ministers' meeting will be adopting a Joint Statement, which inter alia, proposes to establish a Task Force to advise the G20 Energy Ministers on the next steps and agreed to remain engaged in the coming days.

Highlights:

- The meeting was called by Saudi Arabia, in its capacity as the G20 Presidency, and chaired by Saudi Arabia Energy Minister. The meeting was attended by Energy Ministers of G20 countries, guest countries and heads of international organizations including OPEC, IEA and IEF. The G20 Energy Ministers' focused on ways and means to ensure stable energy markets, which are affected due to demand reduction as result of the COVID-19 pandemic and the ongoing surplus production -related matters.

India's Input:

- India calls for G20 taking a human-centric approach for overcoming challenging hardships, especially for the vulnerable. The Minister highlighted the decision of the government of India, under the aegis of the Ujjwala scheme, to provide 80.3 million poor families free LPG cylinders, as part of a 23 billion dollars relief package. India was and will continue to be, the global energy demand centre. The Minister highlighted the Government of India's efforts to fill in Strategic Petroleum Reserves. In terms of the ongoing energy market fluctuations, India has always advocated for a stable oil market, which is reasonable for producers and affordable for consumers. India appreciated the collective efforts of OPEC and OPEC-plus countries to balance the supply-side factors which is imperative for long-term sustainability.

- India, however, urged that oil prices should be targeted to affordable levels to allow for a consumption-led Demand Recovery.

6. WTO Status: China a developing Country

Why in News?

- President of USA has accused China of taking advantage of the US through the World Trade Organisation (WTO), saying that if Beijing is considered a 'developing country', the US should be called one too.

Classification of WTO Member Countries:

- **There are mainly two types of countries in WTO:**
  - ✓ Developed Countries
  - ✓ Developing Countries – **(i) Least Developed Countries and (ii) Developing Countries.**
- **Self-identification** by a member either in the developing group or in the developed group is the first step of classification. Then, WTO identifies the Least Developed Countries from the developing country group by adopting the UN based per capita income criteria.

Who are the Developing Countries in the WTO?

- There are no WTO definitions of developed and developing countries.
- Members announce for themselves whether they are developed or developing countries. However, other members can challenge the decision of a member to make use of provisions available to developing countries.

What are the Advantages of "developing country" Status?

- The WTO Agreements contain provisions which give developing countries special rights. These are called "special and differential treatment" Provisions.

- **The Special Provisions Include:**
  1. Longer time periods for implementing Agreements and commitments,
  2. Measures to increase trading opportunities for developing countries,
  3. Provisions requiring all WTO members to safeguard the trade interests of developing countries,
  4. Support to help developing countries build the capacity to carry out WTO work, handle disputes, and implement technical standards, and
  5. Provisions related to least-developed country (LDC) Members.
  6. Receive protection against sudden import restrictions by developed nations.

- However, if a WTO member announces itself as a developing country, it does not mean that it will benefit from the unilateral preference schemes of some of the developed country such as the Generalized System of Preferences (GSP). In practice, it is the preference giving country which decides the list of developing countries that will benefit from the preferences.

Other Benefits:

- **General Agreement on Tariffs and Trade (GATT):** It gives developing countries the right to restrict imports to promote the establishment or maintenance of a particular industry.

- **Non-reciprocal Preferential Treatment:** When developed countries grant trade concessions to developing countries, developed countries can't force the developing countries to make matching offers in return.

- The Enabling Clause officially called the 'Decision on Differential and More Favourable Treatment, Reciprocity and Fuller Participation of Developing Countries' enables developed members to give differential and more favourable treatment to developing countries.

- **General Agreement on Trade in Services (GATS):** It allows developing countries and countries in transition to restrict trade in services for reasons of balance-of-payment difficulties. Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS): It provides least-developed countries with a longer time-frame to implement all the provisions of the TRIPS Agreement and encourages technology transfer.

- **Waivers:** A waiver enables developing and developed-country members to provide preferential treatment to services and service suppliers of least-developed countries (LDCs).

Least Developed Countries:

- The Classification of least developed countries is based upon the UN identification. The LDCs are identified by the WTO as per the United Nations Economic and Social Council categorization. The categorisation is based upon the per capita income of the countries. The LDCs are the countries with lowest level of per capita income.

- There are currently 47 least-developed countries on the UN list, 36 of which to date have become WTO members.

Issues of Self-Identification:

- Some relatively developed countries claim the identity of developing countries to get certain benefits. For instance, South Korea, Israel, Mexico, and Turkey are members of the OECD (Organisation for Economic Co-operation and Development). However, they sometimes claim to be a developing country in WTO.

- The Bali Ministerial Conference of WTO in 2013 established a mechanism to review and analyse the implementation of special and Differential Treatment Provisions.

7. COVID-19 and its effects on Measles Immunisation Program

Why in News?

- Recently, the UN noted that around 117 million children worldwide are at risk of contracting measles because dozens of countries are curtailing their vaccination programmes as they battle COVID19.

Highlights:

- Due to the COVID-19 pandemic, measles immunisation campaigns have been delayed in 24 countries and will be cancelled in 13 others where healthcare systems are already inadequate.

- While there is a vaccine for measles, the disease claimed 140,000 lives of mostly infants and babies in 2018.

- The coronavirus pandemic, which has necessitated many prevention measures including strict lockdowns, has kept infants from getting routine immunisation services from some other diseases such as polio, yellow fever and cholera.

Measles:

- Measles is a highly contagious viral disease and despite the availability of a vaccine against it, it remains to be a leading cause of death among young children globally.

- The disease is transmitted via droplets released from the nose, mouth or throat of infected persons.
- The initial symptoms occur 10-12 days after contracting the infection and include high fever, a runny nose, bloodshot eyes and the appearance of white spots on the inside of the mouth.
- Some of the most serious complications arising out of the disease include blindness, encephalitis (brain swelling), severe Diarrhoea, dehydration and severe respiratory infections such as pneumonia. The disease is still common in parts of Africa and Asia and is more likely among poorly nourished children, especially those who are deficient in vitamin A.

Effects on Mass immunisation Drives:

- Mass immunisation drives and routine vaccination for children are the key public health strategies against the disease. Therefore, delaying the campaigns affects these strategies, potentially putting the life of thousands of children at risk.
- Countries including Mexico, Bolivia, Lebanon, Nepal and Chile among others have delayed their immunisation campaigns. It notes that children in rich countries are also not totally immune to this disease, since many parents (presumably a part of the anti-vaccination movement) refuse to get their children vaccinated.
- The WHO released an interim guideline for carrying out immunisation activities during COVID-19, which says if immunisation actvities are negatively impacted during the pandemic, respective countries will need to design strategies for delivering "catch-up" vaccines after the outbreak subsides.

8. Defence deal between India and US

Why in News?

- The US has approved a military sale to India of 16 MK 54 all round up lightweight torpedoes and ten AGM-84L Harpoon Block II air-launched missiles.

Highlights:

- In total Two deals have been made.
- A possible Foreign Military Sale to India of 16 MK 54 all round up lightweight torpedoes and related equipment at an estimated cost of $63 million.

- In addition, in another deal, the US approved the possible sale to India of ten AGM-84L Harpoon Block II air-launched missiles and related equipment at an estimated cost of $92 million.
- The principal contractor for the first deal is Raytheon Integrated Defense System based in Portsmouth, Rhode Island, while Boeing is the principal contractor for the equipment in the second deal.
- India plans to use the equipment requested in both the deals on the Indian Navy's Boeing P-8I maritime aircraft.

MK 54 Lightweight Torpedo:

- The MK 54 lightweight torpedo is known as the Lightweight Hybrid Torpedo (LHT).
- It weighs around 608 pounds, while its warhead weighs around 96.8 pounds and is highly explosive.
- The primary use of this equipment is for offensive purposes when deployed by anti-submarine warfare aircraft and helicopters, and for defensive purposes when deployed by ships and against fast, deep-diving nuclear submarines and slow-moving, quiet, diesel-electric submarines.

AGM-84L Harpoon Block II Air-Launched Missiles:

- The Harpoon missile system will be integrated into the P-8I aircraft to conduct anti-surface warfare missions in defence of critical sea lanes.
- It uses GPS-aided inertial navigation to hit the designated target.
- Its warhead weighs over 500 pounds and is capable of delivering lethal firepower against targets, including land-based targets, coastal defence sites, surface-to-air missile sites, exposed aircraft and industrial or port facilities.

P-8I Aircraft:

- Boeing's P-8s are designed for long-range anti-submarine warfare, anti-surface warfare and intelligence, surveillance and reconnaissance missions.
- The P-8s India version is called the P-8I, and helps the Indian Navy carry out important maritime operations.
- According to Boeing, the aircraft can surpass 25,000 flight hours, and gives the Navy a significant edge in the strategically important Indian Ocean.
- India currently has eight of these aircraft and is scheduled to receive four more by 2022.

9. Global Report on Food Crisis

Why in News?

- The 2020 edition of the annual Global Report on Food Crises has been released. The report is produced by the Global Network against Food Crises, an international alliance working to address the root causes of extreme hunger.

Highlights:

- The 2020 edition of The Global Report on Food Crises describes the scale of acute hunger in the world.

- It also examines how the COVID-19 pandemic might contribute to their perpetuation or deterioration.

- At the close of 2019, 135 million people across 55 countries and territories experienced acute food insecurity. Acute food insecurity is when a person's inability to consume adequate food puts their lives or livelihoods in immediate danger.

- Additionally, in 2019, 183 million people were classified in Stressed condition — at the cusp of acute hunger and at risk of slipping into Crisis or worse if faced with a shock or stressor, such as the COVID-19 pandemic.

- Most affected areas: More than half (73 million) of the 135 million people covered by the report live in Africa; 43 million live in the Middle East and Asia; 18.5 million live in Latin America and the Caribbean.

- The key drivers behind the trends analysed in the report were: conflict, (the key factor that pushed 77 million people into acute food insecurity), weather extremes (34 million people) and economic turbulence (24 million).

Global Network Against Food Crisis:

- The Global Network Against Food Crises was launched by the European Union, FAO and World Food Programme(WFP) during the 2016 World Humanitarian Summit (WHS) to respond to the WHS's call for new approaches to tackle protracted crises and recurrent disasters, reduce vulnerability, and manage risk, by bridging the divide between development and humanitarian partners.

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.

- According to the WFP, it provides food assistance to an average of 91.4 million people in 83 countries each year.

- From its headquarters in Rome and from more than 80 country offices around the world, the WFP works to help people who cannot produce or obtain enough food for themselves and their families.

- It is a member of the United Nations Development Group and part of its executive committee.

- The WFP was formally established in 1963 by the FAO and the United Nations General Assembly on a three-year experimental basis.

10. Impact of USA's immigration ban on skilled workers from India

Why in News?

- Recently, the United States President announced that there is a possibility of an executive order to suspend legal immigration into the U.S. for 60 days.

Highlights:

- With the toll of the novel coronavirus on the American population spiralling rapidly, the political pressure has been increasing on the country's leader to take effective action to bring the pandemic under control.

- It is in this backdrop, that the recent announcement has been made. According to sources, the time limit could be extended depending on conditions on the ground.

What Does it Mean for Visa Applicants?

- The order is not expected to halt visa processing for many thousands of temporary employees, including a sizeable number of Indian nationals in the H-1B skilled worker category, agricultural workers classified under the H-2A visa and seasonal workers, who fall into the H-2B category.

- With proper exemptions: According to the White House, the policy will also likely carve out exemptions for certain categories of essential workers, including those in health care and who have a critical role to play in fighting the pandemic.

- Immigration via relatives allowed: Exemptions are also being made for those who seek to immigrate via their immediate relatives.

- This includes spouses and minor children of U.S. citizens applying for green cards, or permanent residency.

- Also, those who have already been granted permanent residence will not be impacted by this executive order.

Other Exemptions:

- Members of the armed forces, those who are immigrating for law enforcement reasons and are already in the pipeline.
- Those on the EB-5 programme, which requires individuals to invest at least $500,000 in U.S. real estate projects, will be considered.

Reason Behind taking such a Step:

- **U.S. Economy in Stress:** Like many others across the world, the US economy has grounded to a virtual halt in the face of the pandemic.
- **An Electoral Issue:** Proposals to restrict immigration served well during the 2016 presidential election, particularly when they were situated in the context of protecting jobs for U.S. workers.
- **To take Electoral Benefits:** The deeper context to the announcement is the fact that the present president is seeking re-election in the upcoming election.

Impact on skilled workers from India:

- On tourism, there is little concern at the present juncture given that India has stopped commercial flights owing to the risks of coronavirus spread.
- Further, in many countries, quarantine procedures apply to international arrivals and this will dissuade many visitors from international travel.
- All are affected: U.S. visa issuance in all countries (not only in India) has ground to a halt.
- This has left many H-1B visa-seekers in the lurch in India, and that could have an economically debilitating impact on the Indian IT and Information Technology Enabled Service (ITeS) sectors.
- However, the visa restrictions are derived more from the overall impact of the pandemic, and not from USA's immigration ban.

1. Lifeline Udan

Why in News?

- As part of India's war against COVID-19, the Ministry of Civil Aviation has launched "Lifeline Udan" flights for the movement of medical and essential supplies across the country and beyond.

Highlights:

- Under this initiative, 62 Lifeline Udan flights have been operated for five days towards March 2020 end, transporting over 15.4 tons of essential medical supplies.

- The carriers involved in Lifeline Udan operations include Air India, Alliance Air, Indian Air Force (IAF) and Pawan Hans. Support is being provided by the Airports Authority of India (AAI), AAICLAS (cargo and logistics subsidiary of AAI), AI Airports Services (AIASL), PPP airports and private ground handling entities.

- Private airline and logistics players are also providing their services for medical cargo.

- The flights are being coordinated by a control room set up at the Ministry of Civil Aviation (MoCA) under the direct supervision of the MoCA leadership.

- The Lifeline Udan cargo includes COVID-19 related reagents, enzymes, medical equipment, testing kits, Personal Protective Equipment (PPE), masks, gloves and other accessories required by personnel engaged in fighting the virus across the country.

2. Diseases of Animal and Forest Origin

Why in News?

- The recent rapid spread of the SARS-CoV-2 virus across the world has focused attention on the invisible processes that help pathogens originally found in wild animals, infect the humans.

Factors for the Origin:

- The destruction of forests and trapping or farming of wild species has brought these animals closer to humans.
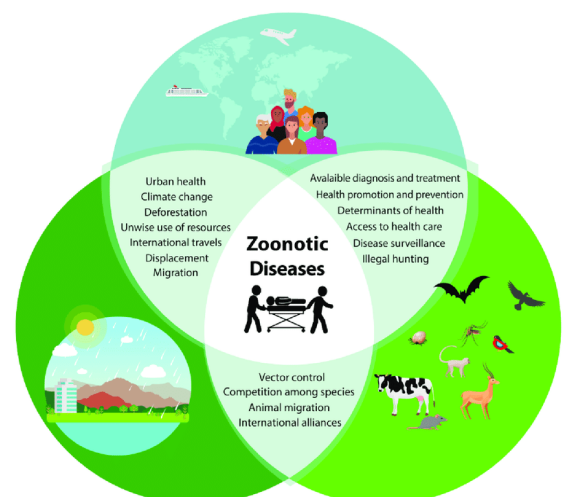
- The viruses they Harbour find ready hosts in domestic animals, moving to humans.
- **Rising Activity:** such as road building and mining cutting through forests bring more people in close contact with Animals.
- Global trade in wild species: for instance, in Wuhan the trade ranges from wolf pups to rats, civets and foxes, etc. and their sale in markets along with domestic animals.

Consequences:

- Unlike previous epidemics, COVID-19 has extracted a staggering toll, killing people, forcing a lockdown.
- Economic devastation and recession.
- Short-term high growth trajectories can come to an abrupt halt with a pandemic.
- Diseases of animal origin: Examples are Ebola, HIV, Severe Acute Respiratory Syndrome, Middle East Respiratory Syndrome, bird flu and swine flu.

What does these Pandemics Signify?

- Maintain viable ecosystems: For instance, Nipah and Hendra viruses, involving transfer from bats to pigs in the former, and bats to horses, highlights the need of maintaining an ecosystem.
- Eliminate the need for wild animals like bats to colonise human surroundings.
- Conserve the biodiversity: Biodiversity in forests harmlessly retains dangerous viruses and other pathogens away from people.
- Stop viewing undisturbed landscapes as an impediment to economic growth.
- Warning to hasty development process: hasty permissions granted for new roads, dams, mines and power projects in already enfeebled forests can unleash more scourges.
- Forest should be left undisturbed. Pristine forests with diverse species keep viruses virtually bottled up, out of man's way.

Zoonotic Diseases:

- Zoonotic diseases are an infectious disease caused by bacteria, viruses, or parasites that spread from non-human animals (usually vertebrates) to humans.
- **Modes of Transmission:**
  1. **Direct Zoonosis:** the disease is directly transmitted from other animals to humans through media such as air (influenza) or through bites and saliva (rabies).
  2. **Indirect Zoonosis:** transmission can also occur via an intermediate species (referred to as a vector), which carry the disease pathogen without Getting Infected.

3. ICMR Issues Rule Book on 'Large Outbreaks'

Why in News?

- The Indian Council for Medical Research (ICMR) public guidelines to manage a large outbreak and guidelines on use of rapid antibody test kits.

Highlights:

- The Health Ministry has stated that 30% (about 1,000 positive cases spread across 17 States) of India's total case count is attributable to one event, the Tablighi Jamaat gathering in Delhi.
- Hence India's official position is that there is no evidence of community transmission in the country.

The Plan for Large Outbreaks, Specifies:

- Active surveillance for cases and contacts in the identified geographic zone
- Expansion of laboratory capacity for testing of all suspect cases of high-risk contacts and Sever Acute Respiratory Illness cases
- Operationalizing surge capacities created for isolation (COVID-19 hospitals/COVID-19 dedicated blocks) to hospitalize and manage all suspect/confirmed cases
- Implementing physical distancing measures with strict perimeter control
- Providing chemoprophylaxis with hydroxy-chloroquine to all asymptomatic healthcare workers and asymptomatic household contacts of laboratory confirmed cases.
- Given the increasing need for more testing and the fact that hundreds of antibody kit manufacturers have been approved in India to offer tests, ICMR has also issued detailed guidelines on the use of rapid antibody testing kits.

Antibody Testing Kits:

- The real-time RT-PCR kits are used to detect an ongoing infection. Unlike RT-PCR kits, the antibody testing kits can indicate if a person has ever been infected by the virus and gives authorities an estimate of whether there are asymptomatic carriers of the infection in a community.
- The antibody testing kits can give results within 15 minutes to two hours.
- However, testing negative via an antibody kit doesn't automatically rule out infection and needs to be supplemented by a PCR test.

4. Operation Sanjeevani

Why in News?

- An Indian Air Force (IAF) C-130J transport aircraft o delivered 6.2 tonne of essential medicines and hospital consumables to Maldives under Operation Sanjeevani.

Operation Sanjeevani:

- At the request of the govt. of Maldives, the IAF aircraft activated Operation Sanjeevani and lifted these medicines from airports in New Delhi, Mumbai, Chennai and Madurai before flying to the Maldives.
- Among other things, these medicines include influenza vaccines, anti-viral drugs such as lopinavir and ritonavir — which have been used to treat patients with COVID-19 in other countries.
- The flights are being operated on commercial basis following demands from pharmaceutical companies and their intermediaries and will carry cargo on inbound as well as outbound flights.
- The cargo operations will help the airline earn some revenue at a time there is a ban on Passenger Flights and the Entire Fleet is Grounded.

5. Zoos in India on High Alert

Why in News?

- Zoos in India are on high alert after the United States (USA) Department of Agriculture's National Veterinary Services Laboratories has confirmed SARS-CoV-2 (COVID-19) in a Tiger housed in the Bronx Zoo, New York.

Highlights:

- Taking cognizance, the Central Zoo Authority under Ministry of Environment, Forest and Climate Change has advised Zoos in the country to remain on highest alertness,
- watch animals on 24X7 basis, using CCTV for any abnormal behavior/symptoms,
- keepers/handlers not to be allowed in the vicinity without safety gear preferably PPE (Personal Protective Equipment), isolate & quarantine sick animals, and have least contact while providing feed to animals.
- The advisory further stated that Mammals like carnivores, especially cats, ferrets and primates to be carefully monitored.

- The fortnightly samples of suspect cases to be sent to the designated animal health institutes to initiate COVID-19 testing while following all bio-containment and safety measures required to handle this high-risk pathogen as per the national / ICMR guidelines:
  - ✓ National Institute of High Security Animal Disease (NIHSAD), Bhopal, MP
  - ✓ National Research Centre on Equines (NRCE), Hisar, Haryana.
  - ✓ Centre for Animal Disease Research and Diagnostic (CADRAD), Indian Veterinary Research Institute, (IVRI), Izatnagar, Bareilly, UP.
- Further, zoos are advised to coordinate with designated nodal agencies of the Government responsible for public health response and permit screening, testing and surveillance and diagnostic samples as and when required by the nodal agency.