

You & Technology COVID-2020



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GOOD MORNING TIMES S&T COVID-SPECIAL-2021

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General Studies Paper-3 – S&T – COVID 2020

COVID-19

There is a large-scale outbreak of COVID19 (Coronavirus Disease 2019) across the world.

Coronavirus and its origin

- Coronaviruses are a large family of viruses that circulate among a range of animals, such as bats, cats, and birds. Sometimes these viruses make a jump over from animals to humans (known as Spill over) causing diseases known as Zoonotic diseases.

- o This spill over happens due to factors such as mutations in the virus or increased contact between humans and animals.

- The virus causes respiratory and gastrointestinal symptoms in humans with infectious diseases ranging from common cold to more severe diseases such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS) and CoVID-19.

- While the SARS coronavirus is thought to have evolved from infecting bats to civet cats to humans in the Guangdong province of southern China in 2002, the MERS evolved from bats to camels to humans in Saudi Arabia in 2012.

- Research suggests that the original source of the virus that caused COVID-19 was bats, and pangolins might have acted as intermediaries. The mutation and natural selection might have taken place either inside pangolins or in humans after transfer from pangolins. This virus was first identified in Wuhan (Hubei province), China in 2019.

Structure and physiology of the virus

- Coronaviruses are spherical shaped and consist of a core of genetic material (RNA) surrounded by

an envelope with mushroom shaped protein spikes. These spikes binds and fuses to human cells allowing the virus to gain entry and replicate itself inside the body.

- Each virus particle is just between 50–200 nanometres in diameter (human hair is 80000nm in diameter).

- The protein spikes gives the appearance of a crown or a halo around the Sun. Crown in Latin is called as “Corona” and this is how the virus also got its name.

- COVID-19 is caused by SARS-CoV-2 also known as novel coronavirus (n-CoV), as it is very similar to the one that caused SARS in 2002.

- The spike protein of the novel coronavirus shares 98% sequence identity with the spike protein of the SARS coronavirus.

- SARS-CoV-2 has spike proteins which contain a receptor-binding domain (RBD). The RBD facilitates the virus’ entry into target cells by binding with the cellular receptor called angiotensin-converting enzyme-2 (ACE-2) found in heart, lungs, kidneys and the gastrointestinal tract.

- Once inside, it hijacks the cell’s reproductive machinery to produce more copies of itself, before breaking out of the cell again and killing it in the process.

- However, unlike in the case of SARS, the spike protein of the novel coronavirus binds to the cell receptor with much higher affinity — 10-to 20-fold higher. The RBD’s bonding affinity is increased due to mutation within the virus.

- This stronger bonding affinity partly explains the apparent high human-to-human transmissibility

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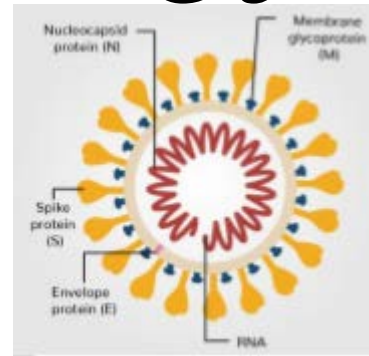
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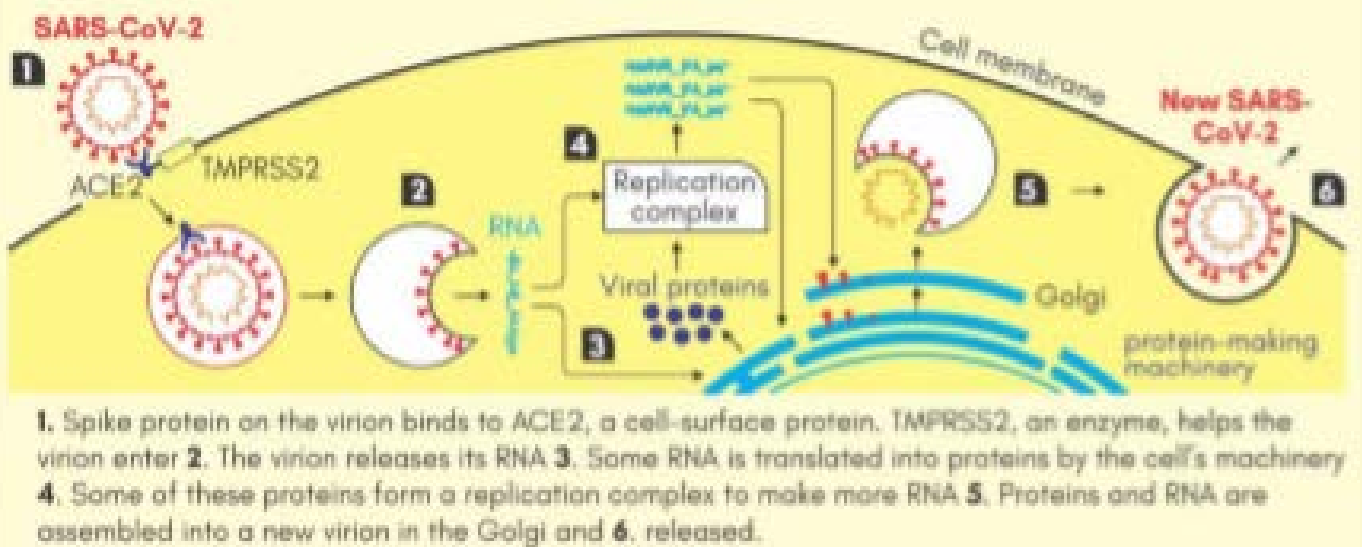
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and COVID19's faster spread as compared to SARS epidemic in 2002-2003 across 29 countries.



How SARS-CoV-2 replicates itself in the cells of those infected



Role of Live Animal Market:

- Live animal markets (also known as 'wet markets' in parts of Asia, such as the Huanan Seafood Market in Wuhan China) are an important risk factor for zoonotic disease spread.
- In the Huanan Seafood Market in China, live fish, meat and wild animals are sold putting people and live and dead animals - dogs, chickens, pigs, snakes, civets, and more - in constant, close contact. That makes it easy for a virus to jump from animal to human.

Primary case and Index case in a disease outbreak

- The term primary case can only apply to infectious diseases that spread from human to human, and refers to the person who first brings a disease into a group of people—a school class, community, or country. For many outbreaks, the primary case will never be known—the worldwide HIV epidemic is one example.
- The index case (sometimes referred to as patient zero) is the first documented patient infected by a viral or bacterial disease in an outbreak within a population.
 - o The index case may or may not indicate the source of the disease, the possible spread, or which reservoir holds the disease in between

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outbreaks, but may bring awareness of an emerging outbreak.

- o Even outbreaks of disease that is not spread from human to human, might have an index case.
- o Currently, we do not know the patient zero in the COVID-19 outbreak. The hypothesis that the outbreak started at the Chinese market and could have been transmitted from a living animal to a human host before spreading human-to-human is

still considered the most likely, according to the World Health Organization (WHO).

- In some instances, the primary case is also the index case, but often they are not the same. Identifying who these people are can help address crucial questions about how, when and why it started. These can then help to prevent more people from getting infected now or in future outbreaks.

DNA VIRUSES	VS	RNA VIRUSES
DNA viruses refer to viruses whose genetic information is stored in the form of DNA		RNA viruses refer to viruses whose genetic information is stored in the form of RNA
Contain DNA as their genetic material		Contain RNA as their genetic material
Most are double-stranded		Most are single-stranded
Replicated inside the nucleus of the host cell		First transcribed and then replicated in the cytoplasm
Viral DNA is first transcribed into RNA, and then mRNA is translated into viral proteins		Can bypass transcription during protein synthesis since they already contain RNA in the genome
Stable due to the lower mutation rate		Unstable due to the higher mutation rate
Shows an accurate replication		Shows an error-prone replication
Contain a large genome		Contain a small genome
Newly-synthesized viral DNA is packed into a pre-formed capsid called procapsid		Newly-synthesized viral RNA is not packed in a procapsid
Smallpox, herpes, and chickenpox are diseases of DNA viruses		Aids, Ebola hemorrhagic fever, SARS, common cold, etc. are some diseases of RNA viruses

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DIAGNOSIS

Currently following tests are available for identifying coronavirus infection in a person:

Serological Tests/Rapid Antibody Detection Tests:

- These are blood/serum/plasma test carried out to determine whether an individual's body has IgM and IgG antibodies developed against the SARS-CoV-2.
- o Immunoglobulins, also known as antibodies, are glycoprotein molecules produced by plasma cells (white blood cells). They act as a critical part of the immune response by specifically recognizing and binding to particular antigens, such as bacteria or viruses, and aiding in their destruction.
- o IgM is the first antibody that the body makes when it fights a new infection and it does not stay for long while IgG can take time to form after an infection or immunization thus indicating an old infection.
- If antibodies are present in the sample, these bind to the antigen immobilised on the test strip and give a coloured reaction.
- These are carried out for symptomatic individuals and have to be confirmed by molecular tests.
- It is also helpful tool for scientist to determine the extent to which a disease has spread and how many have developed immunity to it.

Molecular Test/ Reverse Transcription Polymerase Chain Reaction (RTPCR) test:

- This identifies the presence of virus itself based on its genetic fingerprint.

RT-PCR Test:

- When a person is suspected to be suffering from COVID-19, an oral/nasal swab is taken.
- Viral Ribonucleic Acid (RNA) is isolated from these swabs using a variety of chemicals.

• Enzymes are then added to transcribe the RNA into DNA. This DNA is put into a real-time PCR (RTPCR) machine that xeroxes the DNA, making thousands of copies of any genetic material in the samples.

- Scientists then use sets of DNA fragments that complement fragments found in the coronavirus.
- If any viral genetic material is present, these fragments will bind to it.
- Chemical markers attached to the DNA release fluorescence when this DNA binding occurs.
- It's these flashes of fluorescence that scientists use to determine whether the virus is present in a sample.

Pool Testing Method

- Developed by German Red Cross Blood Donor Service in Frankfurt
- It involves simultaneously testing a combined sample from multiple people from a household or a local cluster to widen reach and speed up results. Suitable for expanded testing in larger population groups.
- In the case of a positive mini-pool result, individual testing is carried out in previously reserved samples. In the case of a negative result, all included samples have a reliable negative result.
- It was earlier used during large outbreaks and invisible community transmission, such as of HIV.

India's Approach

- ICMR's initial strategy was of testing those with a travel history and showing symptoms, and those who have come in contact with persons having a travel history.
- Lately it was revised to test all pneumonia patients for novel coronavirus, hospitals across the

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country have taken to testing all patients admitted with severe respiratory illnesses.

- The new guidelines state asymptomatic direct and high-risk contacts of a confirmed case should be tested once between Day 5 and Day 14 of coming in to the contact of infected person.
- The testing strategy is reviewed and updated by the constituted National Task Force along with a member of the government think-tank, NITI Aayog.
- In India, it has been recommended by ICMR to conduct Rapid Antibody Detection tests in areas reporting clusters of COVID-19 cases, in large migration gatherings and evacuee centres. o HLL Lifecare Limited, a Central Government Enterprise under Ministry of Health and Family Welfare is the first public sector company in India to get approval from ICMR for manufacturing and supplying the Rapid Antibody kit for COVID-19 detection.
- Positive Test results from Rapid Antibody tests are confirmed by RT-PCR tests. o Pune based molecular diagnostic company Mylab developed indigenous RT-PCR based diagnostic test kits. It can test 100 samples and costs 1,200 rupees (a quarter of the 4,500 rupees that India pays to import COVID-19 testing kits from abroad).
- Indian Council of Medical Research (ICMR) allowed all national research laboratories including those under the Council of Scientific and Industrial Research (CSIR) to conduct testing for the novel coronavirus.
- ICMR has suggested Pool Testing Method for the low prevalence areas, where the positive case rate is less than 2 percent. Here, about five samples are clubbed together for a single test. It is to be avoided in all areas where the positive case rate exceeds five percent.

- ICMR introduced Rapid Antibody and Pool Tests to Speed-Up Coronavirus Testing in India

TREATMENT:

To date, there is no vaccine and no specific drug to treat COVID-2019. The most effective measure has been to isolate people who have tested positive, quarantine them and increase social distancing to contain the spread of virus.

Proposed and potential drugs:

WHO has recommended four drugs and their combination under its Solidarity trial initiative to find out whether any can treat infection.

Those are:

- **Remdesivir:** It was previously tested as an Ebola treatment and generated promising results in animal studies for MERS and SARS.
- **Chloroquine and hydroxychloroquine:** are very closely related and used to treat malaria and rheumatology conditions respectively.
- **Ritonavir/lopinavir:** It is a licensed treatment for HIV.
- Ritonavir/lopinavir with Interferon beta-1a: Interferon beta-1a is a molecule involved in regulating inflammation in the body and is used to treat multiple sclerosis.

Convalescent Plasma Therapy:

The US Food and Drug Administration (FDA) approved use of blood plasma from recovered patients to treat severely critical COVID-19 patients.

- About plasma therapy o It seeks to make use of the antibodies developed in the recovered patient against the coronavirus.
- o 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.

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o Either a blood fractionation process is used to separate the plasma from the donated blood or a special machine called aphaeresis machine can be used to extract the plasma directly from the donor.

o WHO guidelines(2014) for plasma therapy:

✓ Donor's permission is mandatory before extracting plasma.

✓ Plasma from only recovered patients must be taken,

✓ Donation must be done from people not infected with HIV, hepatitis, syphilis, or any infectious disease.

✓ If plasma needs to be collected again from the same person, it must be done after 12 weeks of the first donation for males and 16 weeks for females.

o Previous usage of this therapy

✓ The United States used plasma of recovered patients to treat patients of Spanish flu (1918-1920).

✓ Hong Kong used it to treat SARS patients in 2005.

✓ In 2009, H1N1 patients were treated with plasma.

✓ Democratic Republic of Congo and Guinea used it to treat Ebola patients in 2014.

✓ In 2015, plasma was used for treating MERS patients.

Genome sequencing of the coronavirus

• India has shared nine whole genome sequence data of the novel coronavirus (SARS-CoV-2) with the Global Initiative on Sharing All Influenza Data (GISAID). The sequences were shared by the Pune-based National Institute of Virology.

• Genome sequencing is figuring out the order of DNA nucleotides, or bases, in a genome that make up an organism's DNA. The human genome is

made up of over 3 billion base pairs. 30,000 base have been identified in the genome of coronavirus.

• Genetic research would help scientists understand the nature and the evolution of the novel coronavirus, origin of the virus and how the virus has spread. This information will thus help in development of a vaccine and efficient treatment methodology.

• Since the coronavirus may be mutating and developing into new strains, it has been suggested that India needs to sequence more strains to understand it better.

• **Global Initiative on Sharing All Influenza Data (GISAID)**

o It is a platform started by WHO in 2008 and hosted by the German government in partnership with nonprofit organization Friends of GISAID.

o It promotes the international sharing of all influenza virus sequences, related clinical and epidemiological data associated with human viruses, and geographical as well as species-specific data associated with avian and other animal viruses,.

o The Initiative through its database named EpiFlu ensures that open access to data is provided free-of-charge and to everyone to help researchers understand how the viruses evolve, spread and potentially become pandemics.

WHO Solidarity Trial Initiative

• It is an international clinical trial to help find an effective treatment for COVID-19, launched by the World Health Organization and partners.

• It will compare four treatment options against standard of care, to assess their relative effectiveness against COVID-19.

• Enrolling patients in one single randomized trial will help facilitate the rapid worldwide comparison of unproven treatments. This will overcome the risk of multiple small trials not

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generating the strong evidence needed to determine the relative effectiveness of potential treatments.

India's approach

- Indian government has declared Hydroxychloroquine (HCQ) as a schedule H1 drug, that can be sold on prescription only as per the Drugs and Cosmetics Rules, 1945.
- ICMR has advised use of HCQ for high risk individuals like health workers and the asymptomatic household contacts of lab-confirmed cases to shield them from the infection.
- India has never used the Plasma Therapy before though India has facilities for removing 500 ml of plasma from a donor using aphaeresis. India is soon to begin two clinical trials of Convalescent plasma therapy.

VACCINE DEVELOPMENT

- There are more than 20 vaccines currently in development with two in clinical trial phase involving human testing.
- Vaccines developed by Moderna and Oxford university are amongst eight candidates selected and funded by Coalition for Epidemic Preparedness Innovations (CEPI), the world body coordinating the efforts against COVID 19.
- Other than the eight CEPI-funded vaccines, there are also 14 other institutions including two from India: Pune-based Serum Institute of India and Ahmedabad based Zydus Cadila, which are engaged in developing vaccine for this infectious disease.
- A Phase I safety trial of a recombinant adenovirus vaccine candidate manufactured by CanSino Biologics Inc. (Tianjin, China), called Ad5-nCoV, began in China.

Vaccine Development Process

There are six stages of vaccine development which takes around 12-15 years to complete.

- **Exploratory:** This research-intensive phase of the vaccine development process is designed to identify “natural or synthetic antigens that might help prevent or treat a disease.”
- **Pre-clinical:** During this phase, researchers — usually in private industry — use tissue-culture or cell-culture systems and animal testing to determine whether the candidate vaccine will produce immunity. Many candidate vaccines don't move on to the next stage of development because they fail to produce that immunity or prove harmful to test subjects.
- **Clinical development:** At this point, a sponsor, usually a private company, submits an application for to an authorising agency like FDA of USA. This summarizes findings to date and describes how the drug will be tested and created. An institution that will host the clinical trial holds a review board for approval of the application. Once the proposal has been approved, the vaccine must pass three trial stages of human testing:
 - **Regulatory review and approval:** If a vaccine passes through all three phases of clinical development, the vaccine developer submits a Biologics License Application (BLA) to the authorizing agency.
 - **Manufacturing:** Major drug manufacturers provide the infrastructure, personnel and equipment necessary to create mass quantities of vaccines. They also reap the profits of successful or widely distributed drugs.
 - **Quality control:** Stakeholders must adhere to procedures that allow them to track whether a vaccine is performing as anticipated. Multiple systems — including Phase IV trials (optional studies that can be conducted following the release of a vaccine), the Vaccine Adverse Event

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Reporting System (VAERS) and the Vaccine Safety Datalink — are designed to monitor the performance, safety and effectiveness of an approved vaccine.

Types of Vaccines

• Live Attenuated Virus (LAV):

o Uses a weakened (or attenuated) form of the germ that causes a disease. o Because these vaccines are so similar to the natural infection that they help prevent, they create a strong and long-lasting immune response. Just 1 or 2 doses of most live vaccines are enough to give a lifetime of protection against a germ and the disease it causes.

o Used in case of Measles, Rubella (MMR combined vaccine), Tuberculosis, Rotavirus, Oral Polio Vaccine (OPV), Yellow fever etc.

• Inactivated vaccines:

o Uses the killed version of the germ that causes a disease.

o These vaccines usually don't provide immunity that's as strong as live vaccines so several doses over time (booster shots) is needed to get ongoing immunity against diseases. o Used in case of Polio (IPV), Pertussis, Hepatitis A etc.

• Subunit and Recombinant vaccines

o use only part of a target pathogen like its protein, sugar, or capsid (a casing around the germ) presenting it as an antigen on its own to provoke a response from the immune system.

o It can also be created via genetic engineering. A gene coding for a vaccine protein is inserted into another virus, or into producer cells in culture. When the carrier virus reproduces, or when the producer cell metabolizes, the vaccine protein is also created. The end result of this approach is a recombinant vaccine: the immune system will recognize the expressed protein and provide future protection against the target virus.

o Used in case of Haemophilus Influenza type B(Hib). The Hepatitis B vaccine currently used in the United States is a recombinant vaccine.

• Conjugate vaccines

o Similar to recombinant vaccines but are made using pieces from the coats of bacteria. These coats are chemically linked to a carrier protein, and the combination is used as a vaccine.

o Conjugate vaccines are used to create a more powerful, combined immune response: typically the "piece" of bacteria being presented would not generate a strong immune response on its own, while the carrier protein would.

o The vaccines currently in use for children against pneumococcal bacterial infections are made using this technique.

• Toxoid vaccines

o Uses a toxin (harmful product) made by the germ that causes a disease.

o They create immunity to the parts of the germ that cause a disease instead of the germ itself.

o booster shots are needed to get ongoing protection against diseases.

o Used in case of Tetanus and Diphtheria.

• RNA vaccine

o Unlike a normal vaccine, RNA vaccines work by introducing an mRNA sequence (the molecule which tells cells what to build) which is coded for a disease specific antigen, once produced within the body, the antigen is recognised by the immune system, preparing it to fight the real thing.

o RNA vaccines are faster and cheaper to produce than traditional vaccines, and an RNA based vaccine is also safer for the patient, as they are not produced using infectious elements.

o Production of RNA vaccines is laboratory based, and the process could be standardised and scaled, allowing quick responses to large outbreaks and

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epidemics. o Most current research is into RNA vaccines for infectious diseases and cancer.

o No vaccine made from genetic material – RNA or DNA – has been approved till date.

Challenges with vaccines development in case of Pandemics

- Before a vaccine is available the pandemic will probably have peaked and declined.
- As soon as a vaccine is approved, it's going to be needed in vast quantities.
- In case of a pandemic, countries also have to compete with each other for medicines. The challenge is to make sure the vaccine gets to all those who need it.
- Because pandemics tend to hit hardest those countries that have the most fragile and underfunded healthcare systems, there is an inherent imbalance between need and purchasing power when it comes to vaccines. During the 2009 H1N1 flu pandemic, for example, vaccine supplies were snapped up by nations that could afford them, leaving poorer ones short.

STEPS TAKEN BY INDIA TO DEAL WITH THE OUTBREAK

Indian government took multi-pronged and timely actions as the virus spread from China to many parts of the world.

Quarantine, Lockdown, Social Distancing and Awareness Generation

- Suspending visas and quarantining all incoming travelers with subsequent International travel ban.
- Restrictions on International traffic through land borders.
- 21-day nationwide lockdown (Extended by 19 more days) involving closure of all non-essential public places, suspension of railways, intercity bus services and urban metros.

• Cluster containment strategy adopted in the states with high threat of community transmission. The strategy is to contain the virus in a defined geographic area, and help detect the cases at an early stage, break the chain of transmission and prevent its spread to new areas.

- Increasing awareness on importance of social distancing practices.
- Guidelines were issued on use of masks by public and self-quarantine measures.
- Information, Education, & Communication (IEC) material (posters and pamphlets) regarding coronavirus (COVID-19) are being prominently displayed for awareness of the general public in local languages at railway stations and in trains and are also being distributed to patients visiting hospitals and in railway colonies.
- Dedicated TV and Radio Spots (English & Hindi) disseminating information and precautionary measures for public.
- Comic book "KIDS, VAAYU and CORONA" for children by Ministry of Health and Family Welfare (MoHFW) to provide correct information about COVID-19.
- Awareness material specifying Do's and Don'ts during COVID-19 outbreak by MoHFW in English and Hindi.

LEGAL MEASURES:

Legislative Actions For Better Coordination With States

- Disaster Management Act 2005 under which powers conferred on Union Home Secretary were delegated to Secretary, Ministry of Health and Family Welfare to enhance preparedness and containment of the disease. COVID-19 was declared as a "notified disaster" enabling states to spend a larger chunk of funds from the State Disaster Response Fund (SDRF) to fight the pandemic.

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- Epidemics Diseases Act of 1897, under which states were allowed to take appropriate measures that are needed to implement the prevention of infection, and anyone contravening the provisions is amenable to prosecution.

- Essential Commodities Act, 1955 under which masks (2ply & 3ply surgical masks, N95 masks) and hand sanitisers were declared as essential commodities to regulate their production, quality, distribution and logistics and to ensure prevention of hoarding, black marketing and profiteering of these items.

- o An advisory was also issued under the Legal Metrology Act, 2009 for States to ensure that these items are not sold for more than their MRP.

- High level multi-disciplinary Central teams were deputed by Ministry of Health and Family Welfare to assist the States and State Health Department in activities pertaining to cluster containment plan and hospital preparedness (ICU & Ventilator management for COVID-19 patients).

- Emergency Response and Health System Preparedness package to the states aimed at boosting national and state health systems to support the procurement of essential medical equipment and drugs, and the strengthening of surveillance activities.

- Lifeline UDAN an initiative of Ministry of Civil Aviation for air transport of medical cargo and essential supplies across India amid lockdown.

- 11 Empowered groups were set up for ensuring a comprehensive and integrated response to the COVID-19 pandemic.

Epidemic Diseases Act, 1897

The Centre has asked states and Union Territories to invoke provisions of Section 2 of Epidemic Diseases Act, 1897, so that Health Ministry

advisories are enforceable. At present, at least 60 COVID-19 cases have been confirmed in India.

What is Epidemic Diseases Act of 1897?

It is routinely enforced across the country for dealing with outbreaks of diseases such as swine flu, dengue, and cholera. It was introduced by colonial government to tackle the epidemic of bubonic plague that had spread in the erstwhile Bombay Presidency in the 1890s.

Why was this act criticised?

Historians have criticised the Act for its potential for abuse.

Using powers conferred by the Act, colonies authorities would search suspected plague cases in homes and among passengers, with forcible segregations, evacuations, and demolitions of infected places. In 1897, the year the law was enforced, freedom fighter Bal Gangadhar Tilak was punished with 18 months' rigorous imprisonment after his newspapers Kesari and Mahratta admonished imperial authorities for their handling of the plague epidemic.

Provisions of the 1897 Epidemic Diseases Act:

1. It empowers state governments/UTs to take special measures and formulate regulations for containing the outbreak.
2. It also empowers state to prescribe such temporary regulations to be observed by the public or by any person or class of persons as it shall deem necessary to prevent the outbreak of such disease or the spread thereof.
3. The state may determine in what manner and by whom any expenses incurred (including compensation if any) shall be defrayed.
4. The State Government may take measures and prescribe regulations for the inspection of persons

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travelling by railway or otherwise, and the segregation, in hospital, temporary accommodation or otherwise, of persons suspected by the inspecting officer of being infected with any such disease.

5. It also provides penalties for disobeying any regulation or order made under the Act. These are according to section 188 of the Indian Penal Code (Disobedience to order duly promulgated by public servant).

6. It also gives legal protection to the implementing officers acting under the Act.

Examples of implementation:

1. In 2018, the district collector of Gujarat's Vadodara issued a notification under the Act declaring the Khedkarmsiya village in Waghodia taluka as cholera-affected after 31 persons complained of symptoms of the disease.

2. In 2015, to deal with malaria and dengue in Chandigarh, the Act was implemented and controlling officers were instructed to ensure the issuance of notices and challans of Rs 500 to offenders.

3. In 2009, to tackle the swine flu outbreak in Pune, Section 2 powers were used to open screening centres in civic hospitals across the city, and swine flu was declared a notifiable disease.

What is Section 188 IPC?

The Epidemic Diseases Act, 1897 lays down punishment as per Section 188 of the Indian Penal Code, 1860, for flouting orders issued by various state governments to contain the spread of COVID-19. In the past, the Act has been routinely enforced across the country for dealing with outbreaks of diseases such as swine flu, dengue, and cholera. Its penal provisions are currently being invoked by states to contain the COVID-19 pandemic.

So, What is Section 188 of the Indian Penal Code?

Section 188 relates to Disobedience to order duly promulgated by public servant.

- It says violators can be punished with simple imprisonment for a term which may extend to one month or with fine which may extend to two hundred rupees, or with both;
- and if such disobedience causes or tends to cause danger to human life, health or safety, or causes or tends to cause a riot or affray, shall be punished with imprisonment of either description for a term which may extend to six months, or with fine which may extend to one thousand rupees, or with both.

What happens if you violate the lockdown orders?

Under Section 188, there two offences:

1. Disobedience to an order lawfully promulgated by a public servant, If such disobedience causes obstruction, annoyance or injury to persons lawfully employed Punishment: Simple Imprisonment for 1 month or fine of Rs 200 or both
2. If such disobedience causes danger to human life, health or safety, etc. Punishment: Simple Imprisonment for 6 months or fine of Rs 1000 or both According to the First Schedule of the Criminal Procedure Code (CrPC), 1973, both offences are cognizable, bailable, and can be tried by any magistrate.

These are extraordinary times, but under what circumstances is Sec 188 IPC invoked normally?

To be punishable under S. 188, the order has to be for public purposes by public functionaries. An order made in a civil suit between two parties does

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not fall under this Section. There must be evidence that the accused had knowledge of the order with the disobedience of which he is charged. Mere proof of a general notification promulgating the order does not satisfy the requirements of the section. Mere disobedience of the order does not constitute an offence in itself, it must be shown that the disobedience has or tends to a certain consequence.

Protecting Marginalized And Vulnerable Sections

- Under the National Food Security Act (NFSA), 2013 government announced distribution of 5 kg of wheat or rice and one kg of preferred pulses free-of-cost every month over the next three months to 80 crore poor across the country to ensure availability food to poor people during lockdown due to COVID-19.
- Wage rates for unskilled manual workers was hiked across all states and Union territories under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) for the financial year 202021.
- Prime Minister's Garib Kalyan package of Rs. 1.7 lakh crore for a range of measures to alleviate the economic, health, and food-related distress of India's poor in the wake of the national lockdown to combat the spread of the novel coronavirus. (Details are covered under Schemes in news section.)
- Rs 50 lakh insurance cover per person for frontline health workers involved in managing the Coronavirus (COVID-19) outbreak would include sanitation staff, doctors, Asha workers, paramedics and nurses.
- Free cooking gas cylinders for 8.3 crore families living below the poverty line

- Ex-gratia amount was announced for 3 crore senior citizens, the disabled and widows amongst the poor.

Leveraging the Use of Technology

- PM Innovate challenge inviting applications from individuals, startups and companies to provide innovative technological solutions to fight the virus.
 - o For the first time, the government has released data sets for researchers, including those on genome sequencing, epidemiological data repository by Johns Hopkins University Center, Genetic Sequences related to COVID-19, etc.
- Fight Corona IDEathon a 2-day online ideathon to find accessible and affordable technological solutions that can contain the rapid spread of COVID-19 was held.
 - o It was organised by All India Council for Technical Education and MHRD Innovation Cell and other partners.
- Proposals were invited by Science & Engineering Research Board (SERB) as part of its Intensification of Research in High Priority Areas (IRHPA) scheme to ramp up national R&D efforts for new antivirals, vaccines, and affordable diagnostics.
- 'Samadhan' challenge launched by the Innovation Cell of the Ministry of Human Resource for student innovators, researchers, educators and startups to invite ideas and innovations that can help fight against the coronavirus outbreak.
- Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH) initiative of Department of Science and Technology to extend timely support to potential start-ups by way of the requisite financial assistance and fund deployment targeting innovations to control COVID-19 that

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are deployable in the market within next 6 months.

- COVID-19 National Teleconsultation Centre (CoNTeC) is a Multi-modal Telemedicine Hub established by AIIMS, New Delhi, wherein expert doctors from various clinical domains will be available 24x7 to answer the multifaceted questions from specialists from all over the country for treatment of the COVID-19 patients.
- o It has been conceptualised by the Ministry of Health & Family Welfare.

OTHER STEPS

- To provide relief to the affected, a public charitable trust under the name of 'Prime Minister's Citizen Assistance and Relief in Emergency Situations Fund' (PM CARES Fund) was set up.
- Evacuations of Indians from various COVID-19 affected countries.
- Ban on the exports of personal protective equipment, including surgical masks, gloves and N95 respirators.
- Exemptions from basic customs duty and health cess on the import of ventilators, face masks, surgical masks, personal protection equipment (PPE), COVID-19 test kits.
- Incentive scheme to boost domestic manufacturing of active pharmaceutical ingredients (APIs),
- Allowing 'high quality' private labs to test for COVID-19 to increase testing capacity in India
- Quarantine facilities were set up by Indian Defence Forces.
- 30% pay cut for all members of Parliament and suspension of the Member of Parliament Local Area Development (MPLAD) fund for two years thus sending a message that the country should be ready for sacrifices in its fight against the COVID-19 pandemic and using these funds to strengthen

the government's efforts in managing the challenges and adverse impact of COVID-19 in the country.

Significance of 21 Days Lockdown strategy

- There is a scientific basis and epidemiological meaning to this number.
- Its calculations are based on the incubation period of the virus in a human host. i.e. the time between the entry of virus to the onset of symptoms.
- The first 14 days is observed as the incubation period. The next 7 days is added for the residual infection to die out.
- As per the public health experts, this is the most effective way of preventing the spread of the infection from those already infected into the community and thus critical to break infection chain of Coronavirus.
- A recent study inferred that the median incubation period for COVID-19 is just over five days and 97.5% of people develop symptoms within 11.5 days of infection.
- A lockdown period also creates awareness of the situation, disinfection of all buildings, vehicles and surfaces are carried out in this period and the period allows hospitals to prepare for the next phase of operations.
- Such a quarantine period has been discussed even in the context of Ebola.

TRIBAL LOCKDOWN RITUALS

- Recently, tribal lockdown rituals have staged a comeback in Arunachal Pradesh, the State geographically closest to China's Hubei province where the COVID-19 outbreak began. Some of them are:

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• **Arr-Rinam by the Galo tribe:** This prohibits the entry and exit of people into and from the villages two days after it begins.

• **Motor/Pator by the Adi tribe:** It is a customary selfrestriction where several villages prevented the entry of outsiders by erecting barricades. Nobody is allowed to enter or leave these villages.

• **Arrue by the Nyishi tribe:** It is a self-quarantine ritual performed by the dominant Nyishi community in districts such as Papum Pare and East Kameng of Arunchal Pradesh. o Other such rituals include KhyasangRatar and Merii.

CONCEPT OF FLATTENING THE CURVE

• The WHO has repeatedly underlined the importance of “flattening the curve” in order to tackle the coronavirus outbreak, calling on

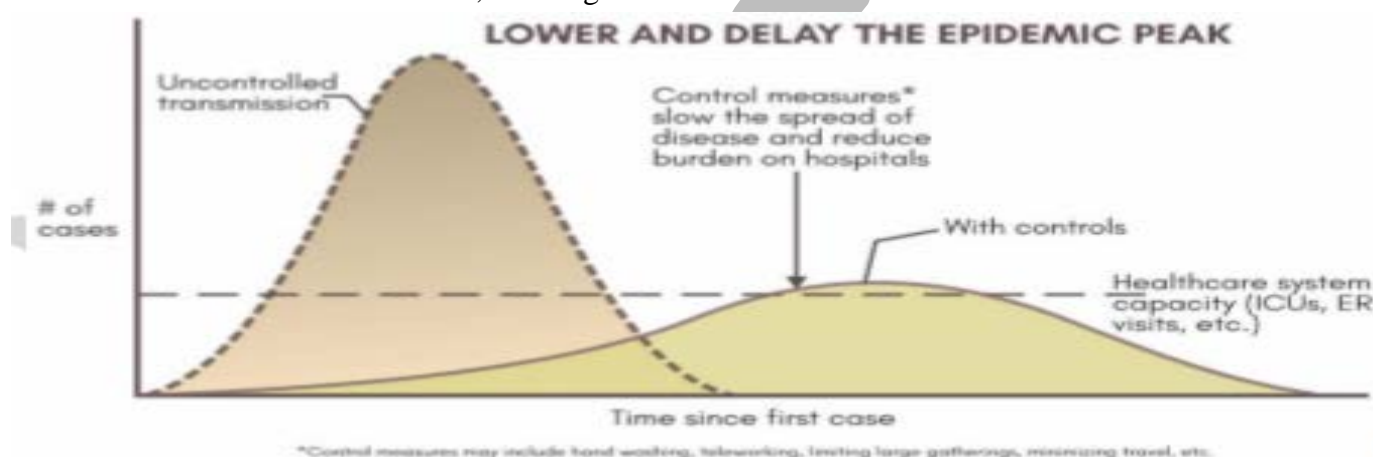
countries around the world to impose sweeping public health measures.

• This approach is saving lives and buying time for the development of vaccines and treatments.

• In epidemiology, the curve refers to the projected number of new cases over a period of time.

• The idea of flattening the curve is to stagger the number of new cases over a longer period, so that people have better access to care.

• It explains why so many countries are implementing draconian policies, such as social-distancing guidelines, “shelter in place” orders, restrictive travel measures and asking citizens to work or engage in schooling from home.



• The above chart shows two curves with two very different virus reproduction rates.

• In the steepest curve, the virus reproduces quickly in a short period of time. In this scenario, emergency rooms, intensive care units and other parts of the health care system are overwhelmed. In an overwhelmed system, mortality rates can be high and those infected may not get the treatment they need.

• In the second, flatter curve, controls help slow the spread of the virus. Infections occur, but over a longer period of time. Since health care workers and facilities are not overwhelmed, those infected receive better treatment and fewer deaths occur.

HERD IMMUNITY

Natural herd immunity was advocated for some time by the UK government as a strategy to contain the COVID19 pandemic in their country.

About the concept

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- It is the indirect protection from a contagious infectious disease that happens when a population is immune either through vaccination or immunity developed through previous infection.
- Vaccinated or immune people act as a buffer between the infected persons and people who aren't vaccinated, or in whom the vaccine doesn't trigger immunity.
- Once herd immunity has been established for a while, and the ability of the disease to spread is hindered, and can eventually be eliminated.
- Mass vaccination has been highly successful in inducing herd immunity for many diseases, protecting those that are unable to build up immunity, such as people with immune deficiencies or whose immune systems are being suppressed for medical reasons.
- Herd immunity was recognized as a naturally occurring phenomenon in the 1930s during the measles outbreak.
- It does not apply to all diseases, just those that are contagious, meaning that they can be transmitted from one individual to another. Tetanus, for example, is infectious but not contagious, so herd immunity does not apply.

Challenges in creating Herd Immunity

- Percentage of immune population
 - o The more infectious a disease, the greater the population immunity needed to ensure herd immunity.
 - o For example, measles is highly contagious and one person with measles can infect up to 18 other people. In this case around 95% of people need to be immune in order for the wider group to have herd immunity.
 - o The new coronavirus has a lower infection rate than measles, with each infected person passing it on to two or three new people, on average. For this, herd immunity should be achieved when

around 60% of the population becomes immune to COVID-19.

- Natural herd immunity
 - o It is achieved through infection rather than vaccination.
 - o It can be challenging to induce it through unchecked infection as there would be a very high rate of serious illness and death, with health systems overwhelmed well beyond their surge capacity, even in high-income countries.
 - o This is why herd immunity is generally pursued through vaccination programmes.
- Mutation within the organism
 - o Even when vaccines are available, it is not always possible to achieve herd immunity for very long.
 - o Some viruses, such as seasonal flu, mutate frequently, evading the body's immune response.
 - o So immunity doesn't always last forever, which is why the flu shot is necessary every single year.
- Free Riders Problem
 - o When herd immunity is well established, however, some people choose to behave as 'free riders', essentially benefitting from everyone else getting vaccinated, while abstaining from vaccination either because they choose not to or are actively anti-vaccination.
 - o When a population has too many of these free riders, the overall immunity level is compromised and herd immunity can be lost, putting everyone at risk.

PANDEMIC DISEASE

- In March, 2020 WHO publicly characterized COVID-19 as a pandemic:
- According to the World Health Organization, a pandemic is declared when a new disease for which people do not have immunity spreads around the world and between people sustainably beyond expectations.

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- Declaring a pandemic has nothing to do with changes to the characteristics of a disease, but is instead associated with concerns over its geographic spread.

- The use of this term highlights the importance of countries throughout the world working cooperatively and openly with one another and coming together as a united front in efforts to bring the situation under control. However, if declaring a pandemic triggers global panic, this can defeat the purpose of trying to raise awareness.

- There is no threshold, such as a certain number of deaths or infections, or number of countries affected, that needs to be met in order to declare a disease as pandemic. For example, the SARS coronavirus, identified in 2003, was not declared a pandemic by the WHO despite affecting 26 countries. However, its spread was contained quickly, and only a handful of nations were significantly affected, including China, Hong Kong, Taiwan, Singapore and Canada.

- COVID-19 is the first pandemic known to be caused by the emergence of a new coronavirus. In the past century, there have been four pandemics caused by the emergence of novel influenza viruses. As a result, most research and guidance around pandemics is specific to influenza.

- The last pandemic declared was in 2009 during the outbreak of H1N1 flu, commonly known as the swine flu which killed up to 575,000 people in the past decade.

- Pandemics of the past century were influenza-related and charted in six phases WHO used to

make recommendations based on the severity of a disease's spread.

Public health emergency of international concern (PHEIC)

- Earlier in January 2020, the World Health Organization declared the COVID-19 outbreak a "public health emergency of international concern" (PHEIC).

- PHEIC is a formal declaration by the International Health Regulations Emergency Committee of World Health Organization (WHO) of "an extraordinary event which is determined to constitute a public health risk to other States through the international spread of disease and to potentially require a coordinated international response", formulated when a situation arises that is "serious, sudden, unusual or unexpected".

- It is not only confined to infectious diseases, and may cover an emergency caused by a chemical agent or a radio nuclear material.

- Under the 2005 International Health Regulations (IHR), states have a legal duty to respond promptly to a PHEIC. • Emergency Committee (EC) under the IHR was developed following the SARS outbreak of 2002–03.

- PHEIC declarations so far: Since 2009 there have been six PHEIC declarations: the 2009 H1N1 (or swine flu) pandemic, the 2014 polio declaration, the 2014 outbreak of Ebola in Western Africa, the 2015–16 Zika virus epidemic, the ongoing 2018–20 Kivu Ebola epidemic, and the ongoing 2019–20 coronavirus pandemic.

- The recommendations are temporary and require reviews every three months.

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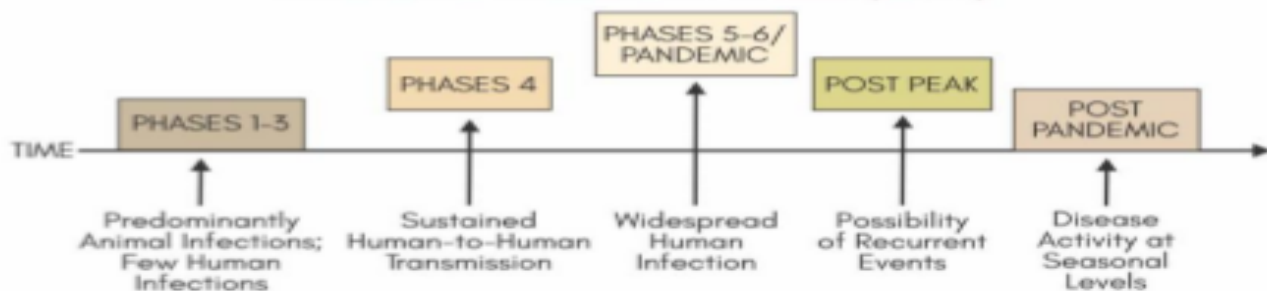
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EPIDEMIC	VERSUS	ENDEMIC
		
EPIDEMIC		ENDEMIC
A widespread occurrence of an infectious disease in a community at a particular time		A regularly found disease among people in a certain area
Cause a significant damage to the living organisms within a short period of time		Prevalent in a certain region or population
Rate of infection continuously increases		Rate of infection is constant
Ex: smallpox, H1N1, black plague		Ex: malaria, tuberculosis, chicken pox, etc.

PANDEMIC INFLUENZA PHASES (2009)



Phase 4 to 6 involves four stages of a Pandemic that are:

- **Stage 1- Imported cases** involving those who have travelled to virus hit foreign countries and have come back to a country.
- **Stage 2- Local Transmission** involving those cases who have come in contact with patients who have a travel history.
- **Stage 3- Community transmission** when a patient not exposed to any infected person or one who has travelled to any of the affected countries tests positive. Large areas get affected when community transmission takes place.
- **Stage 4-** This is the last and the worst stage where the disease takes the shape of an epidemic with no clear endpoint.

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“Scitech Airon”

A new technology has been adopted by the Maharashtra hospitals in the fight of COVID-19 fight. The technology was developed by a Pune based Start Up.

- The product is named “Scitech Airon”. It is a Negative Ion Generator.
- The technology has been developed under the NIDHI PRAYAS program initiated by the Department of Science and Technology (DST).

How it works?

1. The Scitech Airon ionizer machine generates negatively charged ions at approximately hundred million per 8 seconds (10 ions per sec).
2. The negative ions generated by the ionizer form clusters around microparticles such as airborne mould, corona or influenza viruses, mite allergens, bacteria, pollens, dust and so on and render them inactive through a chemical reaction by creating highly reactive OH groups called hydroxyl radicals and H O which are highly reactive and known as atmospheric detergents.
3. The detergent property generated by the ion generator helps in the breakdown of the outer protein of the allergens, viruses, and bacteria, which helps in controlling airborne diseases.
4. It increases the body’s resistance to infections and harmful environmental factors. This resistance could be helpful for the next 20-30 days outside the ion atmosphere.
5. It also decomposes gaseous pollutants like Carbon Monoxide (1000 times more harmful than Carbon dioxide), Nitrogen dioxide, and Volatile Organic Compounds.

Significance of the technology: It helps to control the virus, bacteria, and other fungal

infections in a closed environment and could help purify the air and disinfect areas around COVID-19 positive cases and suspects. Hence it could ensure the wellbeing of the staff, doctors, and nurses who are working round the clock in quarantine facilities by enhancing their disease-resistance power and ability to fight the virus.

What is NIDHI program?

Department of Science & Technology has launched a NIDHI program (National Initiative for Developing and Harnessing Innovations) under which programmes for setting up of incubators, seed fund, accelerators and 'Proof of concept' grant for innovators and entrepreneurs have been launched. Under NIDHI, PRAYAS (Promoting and Accelerating Young and Aspiring innovators & Startups) programme has been initiated in which established Technology Business Incubators (TBI) are supported with PRAYAS grant to support innovators and entrepreneurs with grants for 'Proof of Concept' and developing prototypes. A maximum grant of Rs. 220 lakh is given to a TBI for establishing a PRAYAS Centre which includes Rs.100 lakh for PRAYAS SHALA, Rs. 20 lakh for operational cost of PRAYAS Centre and maximum of Rs. 10 lakh to one innovator for developing prototype. Funding for ten innovators is given to the TBI in a year.

How does soap use help in tackling COVID-19?

Guidelines by the World Health Organization, to reduce the risk of SARS-CoV-2 infection, specify that one of the ways to reduce the risk of infection is by regularly and thoroughly cleaning one’s hands with an alcohol-based hand rub or washing them with soap and water.

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

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Using soap is more effective in removing microbes on our hands.

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

Do all viruses have the lipid layer?

No, certain viruses do not have the lipid envelop and are called the non-enveloped viruses. Rotavirus which causes severe diarrhoea, poliovirus, adenovirus that cause pneumonia and even human papillomavirus (HPV) do not contain the lipid envelop. The oil-loving tail of the soap molecule also disrupts the bond that binds dirt and non-enveloped viruses to the hand. The dirt and viruses are surrounded by several tails making them remain as suspended particles. Rinsing with water washes away the suspended particles leading to clean hands.

How do alcohol-based hand sanitisers help get rid of coronavirus?

Like soap, the alcohol present in hand sanitisers dissolve the lipid envelop, thus inactivating the virus. In addition, the alcohol also tends to change the shape or denature the mushroom-shaped

protein structures that stick out of the lipid envelop. The mushroom-shaped protein structures help the virus to bind to special structures found on human cells and enter the cells. To be effective, the sanitisers should contain at least 60% alcohol. Unlike water, alcohol run does not remove the dead viruses from the hand. While a sanitiser can quickly reduce the number of microbes, it does not get rid of all types of germs, and is "not as effective when hands are visibly dirty or greasy".

Primary precautions: WHO cautions that using a mask alone will be insufficient to provide an "adequate level of protection". It should be combined with hand hygiene to prevent human-to-human transmission.

ONE HEALTH

There has been an increased focus across the world on one health approach in the light of global outbreak of COVID-19.

- The term 'One Health' was first used in 2003–2004, in association with the emergence of severe acute respiratory disease (SARS) in early 2003 and subsequently by the spread of highly pathogenic avian influenza H5N1, and by the series of strategic goals known as the 'Manhattan Principles'.
- It is a collaborative, multisectoral, and transdisciplinary approach — working at the local, regional, national, and global levels — with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.
- Successful public health interventions require the cooperation of Professionals in human health (doctors, nurses, public health practitioners, epidemiologists), animal health (veterinarians, paraprofessionals, agricultural workers),

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environment (ecologists, wildlife experts) along with other relevant players including law enforcement agencies, policymakers, agriculture, communities, and even pet owners.

- One Health issues include zoonotic diseases, antimicrobial resistance, food safety and food security, vector-borne diseases, environmental contamination, and other health threats shared by people, animals, and the environment.

Relevance of one health

In recent times, many factors have changed interactions between people, animals, plants, and our environment and have led to the spread of existing or known (endemic) and new or emerging zoonotic diseases:

- Climate and land use change: The earth has experienced changes in climate and land use, such as deforestation and intensive farming practices. Disruptions in environmental conditions and habitats can provide new opportunities for diseases to pass to animals. o Animals also share our susceptibility to some diseases and environmental hazards. Because of this, they can

sometimes serve as early warning signs of potential human illness. For example, birds often die of West Nile virus before people in the same area get sick with West Nile virus infection.

- Geographic expansion of human habitats: Human populations are growing and expanding into new geographic areas. As a result, more people live in close contact with wild and domestic animals, both livestock and pets.

Manhattan Principles

- These were derived at a meeting of the Wildlife Conservation Society in 2004, which clearly recognised the link between human and animal health and the threats that diseases pose to food supplies and economies.

- These are the set of 12 principles as a vital step in recognising the critical importance of collaborative, cross-disciplinary approaches for responding to emerging and resurging diseases, and in particular, for the inclusion of wildlife health as an essential component of global disease prevention, surveillance, control, and mitigation.



GLOBAL BEST PRACTICES

Controlling and fighting the Pandemic

- Testing: Large scale testing with quick results is the most effective tool that we have in order to control and limit the number of positive cases.

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South Korea	It has tested more than a quarter-million people for the virus; there are over 600 testing sites nationwide, with a capacity to test up to 20,000 people each day. Results are released, on average, within 6 hours via text.
Israel	RADLogics (IT Company in Israel) has adapted its AI-powered medical-image analysis solution to automatically and accurately detect and classify COVID-19 infection in chest CT images of patients believed to be infected. <ul style="list-style-type: none"> • The solution has been deployed in China, Russia and Italy to measure the percentage of affected lung volume.
Germany	Pool Testing Method developed by German Red Cross Blood Donor Service in Frankfurt. It involves simultaneously testing a combined sample from multiple people from a household or a local cluster to widen reach and speed up results. Suitable for expanded testing in larger population groups. <ul style="list-style-type: none"> • In the case of a positive mini-pool result, individual testing is carried out in previously reserved samples. In the case of a negative result, all included samples have a reliable negative result. • It was earlier used during large outbreaks and invisible community transmission, such as of HIV.

- **Tracking and Surveillance:** Tracking as well as continuous monitoring is essential to control the spread of the pandemic.

Australia	Its approach to the pandemic is based on mathematical models of infectious diseases which represent the way infections spread between individuals, in households, and through society.
Singapore	Singapore has adopted high-tech surveillance tools, including a smartphone app that tracks users' location and proximity to other people using Bluetooth, alerting those who come in contact with someone who has tested positive or is at high risk for carrying the coronavirus.
Germany	Corona taxis: Medics outfitted in protective gear, driving around the empty streets to check on patients who are at home, five or six days into being sick with the coronavirus. <ul style="list-style-type: none"> • They take a blood test, looking for signs that a patient is about to go into a steep decline. They might suggest hospitalization, even to a patient who has only mild symptoms; the chances of surviving that decline are vastly improved by being in a hospital when it begins.

- **Quarantine:** Strict, efficient and humane quarantine arrangements are essential to isolate and treat positive cases. Such a system needs clear policy, quick action and adequate infrastructure.

Poland	Poland launched a home quarantine app that uses location data, facial
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	recognition and timestamped photographs to ensure home quarantine.
China	New hospitals were built in record time. An excellent example is the newly built Huoshenshan and Leishenshan Hospitals, which offer 2,600 beds in total.
Taiwan	Taiwan rolled out an "electronic fence" strategy that utilizes location-tracking services in mobile phones to ensure people who are quarantined stay in their homes.

- Medical equipment and Food supply: Medical supplies such as masks, ventilators and other protective gear need to be produced rapidly and made available swiftly. Also, regular food supplies play a critical role in sustaining the population and minimizing the indirect impact of the pandemic.

Morocco	A group of engineers have converted decathlon snorkeling masks into respirators for coronavirus patients
Taiwan	The government here took control of face mask distribution from the private sector, ensuring there would be no hoarding of supplies or exploitative pricing, as has happened in other places such as Hong Kong.
Private Companies	Companies like Rolls-Royce, Airbus, Ford, GM, Tesla, Volkswagen etc. are working with existing manufacturers of ventilators to ramp up production of their existing designs using

	technologies like 3D printing.
China	Vegetable Basket project: Farmers and merchants in nine provinces worked together to supply grains, oil, meat and vegetables to Hubei province, the epicenter of the outbreak.
UK	National Health Service (NHS) volunteer scheme: Under this people aged 18 and over and in good health and without coronavirus symptoms – are being asked to sign up online to provide support by doing tasks like collecting shopping, medication etc.

Mitigating effects on other dimensions of life

- Education: Education can get drastically affected if the pandemic persists and the educational institutions are unable to develop alternate mechanisms.

Bulgaria	More than 800,000 accounts have been created for all teachers and parents, publishers have been mobilized to open the digital textbooks and learning materials for grades 1 to 10.
UNESCO	Combat COVID-19, Keep learning: This is an online platform launched by UNESCO Institute for Information Technologies in Education (IITE). Platform hosts various resources provided by the partners like educational courses, webinars, distance learning portals, communities and technical solutions that can be used to

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organize online learning.

- **Employment:** CoViD-19 has strained the global economy as businesses are down and employees are as they are losing their jobs.

New Zealand	<p>New Zealand has developed a special COVID-19 Wage Subsidy Scheme to help businesses and affected workers in the short-term, as they adjust to the initial impact of COVID-19.</p> <p>✓ The scheme supports:</p> <p>a) employers adversely affected by COVID-19, so that they can continue to pay their employees, as well as</p> <p>b) Workers to ensure they continue to receive an income, and stay connected to their employer, even if they are unable to work.</p>
Kazakhstan	<p>Its Employment Roadmap Program will cover more than 7 thousand projects. Of these, more than 300 are productive, promising projects that will make it possible to create new permanent jobs.</p>

• Other Innovative measures

IPA, WHO and UNICEF	<p>They have launched 'Read the World' on International Children's Book Day to support children and young people in isolation. Hence, much-loved children's authors are joining an initiative to read extracts of their books to millions of children and young people currently</p>
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	<p>living in isolation amid the crises.</p>
Australia	<p>It is one of the very few countries to be delivering support to individuals experiencing domestic, family and sexual violence due to the fallout of coronavirus as well as to support the mental health and wellbeing of Australians.</p>
USA	<p>A project called Folding@Home is providing researchers working on CoViD-19 with access to the fastest computer resources on the planet.</p> <p>✓ The system allows volunteers to download software onto their home computers to use their CPU and GPU resources when they are idle, to perform calculations for the scientists.</p>

DOMESTIC BEST PRACTICES

Controlling and fighting the pandemic

- **Testing:** In a country with high population density like India, it becomes extremely important to test as many people as possible to halt the spread of the disease.

Kerala	<p>Walk-in Sample Kiosks (WISK): which looks like a glass cabin, is made in such a way that the environment inside it where the medical staff stands, is always sterile. Healthcare professionals in the kiosk can collect swabs of people who will stand outside the kiosk.</p>
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Jharkhand	Phone Booth COVID-19 Sample Collection Centre: The structure is just like a Phone booth consisting of a small cubical for the health worker with COVID-19 sample collecting kit. <ul style="list-style-type: none"> ✓ It ensures safety of Health workers while collecting sample from suspected patients. ✓ It is very easy to assemble and can be taken to different locations for testing.
Module Innovations (start-up)	This Pune based healthcare startup has been developing a product namely nCoVSENSEs which is a rapid test device for detection of IgG and IgM antibodies that are generated against the COVID 19 in the human body. It would reduce the testing time to 10-15 minutes.

- **Tracking and Surveillance:** Robust tracking and surveillance enables optimization of both resources and efforts and also keep the spread of pandemic in check.

Bhilwara Model	Bhilwara model: The measures taken by the Rajasthan government include <ul style="list-style-type: none"> ✓ Imposing a curfew in the district which also barred essential services. ✓ Extensive screening and house-to-house surveys to check for possible cases. ✓ Detailed contact tracing of each positive case so as to
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	create a dossier on everybody they met ever since they got infected.
Smart Cities	Smart Cities of Pune, Surat, Bengaluru and Tumakuru are using the integrated data dashboards, developed by the data analysts and data experts working with their Integrated Command and Control Centers (ICCCs) (also functioning as COVID-19 War Rooms in many cities).
Maharashtra	Maharashtra has formed a cluster containment plan to deal with the contagion. The state is using data analytics, drones and the traditional patrolling methods to deal with containment in crowded places. In every district two to three drones are pressed that are used to monitor movements of streets
Staqu (start-up)	This Gurugram-based startup has launched a thermal camera which detects individuals with a body temperature of more than 37 degree Celcius and alerts the system. <ul style="list-style-type: none"> ✓ The system has a range of up to 100 meters and the camera is able to identify multiple people at once. This can come extremely handy in scanning crowded places like airports, railway stations, malls, etc.
AAROGYA	It is Bluetooth and GPS based

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SETU APP	<p>COVID -19 tracker. It will provide accurate information to the public for the spread, risk, prevention and treatment of COVID-19 infection.</p> <p>✓ If user tests positive, then this app will share data with the government, but it does not share data with other third-party apps.</p> <p>✓ It is also equipped with an alarm which is raised when a person comes under 6 m radius of a CoViD-19 positive person.</p>
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Railways	<p>into isolation wards for coronavirus patients. It has already converted around 2,500 coaches into 40,000 isolation beds, which are now ready for contingency.</p>
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- **Awareness:** Lack of awareness and circulation of misinformation can be dangerous in times of crises. Consequently, increasing awareness and educating people is as important as any other step in such times.

PRADAN (National NGO)	<p>It has taken up the responsibility to spread awareness among the tribal communities and marginalized women and provide them the much-required handholding support on certain major aspects of hygiene and safe practices.</p> <p>✓ Women leaders learnt how to make sanitisers with fermented Mahuwa flowers as well as prepare and use masks made with tissue papers and rubber-bands. The high alcohol content in Mahuwa flowers is being capitalised for making sanitiser.</p>
Press Information Bureau (PIB)	<p>Fact checking portal by Press Information Bureau (PIB):</p> <p>✓ The PIB has set up a portal for fact-checking issues related with the novel coronavirus pandemic, and it will receive messages by email and send its response in quick time.</p>

- **Quarantine:** In India, ensuring adequate number of quarantine facilities is a challenge. Efforts are needed to make home quarantine successful and simultaneously expanding the infrastructural capacity.

Karnataka	<p>Quarantine Watch App: Home quarantined coronavirus suspects and patients will have to send their selfies on the Quarantine Watch which are linked to the person's GPS coordinates.</p>
Kerala	<p>Geo fencing App: The technology is used for identifying people who evade quarantine. It establishes a virtual boundary around the houses of people who have been kept under quarantine. If the person, under quarantine, steps out of their house, it will be documented in the geo-fencing software of the cyber cell department.</p>
Indian	<p>It aims to convert 5,000 coaches</p>

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	✓ The PIB will also release a daily bulletin to inform regarding Centre's decisions and developments and progress on COVID 19.
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	videoconferencing, 24x7 e-filing facilities and a provision to beam proceedings through smart TVs into press rooms inside the court complex.
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Mitigating effects on other dimensions of life

Education	Rajasthan government has joined hands with e-learning platform Bright Tutee to launch a free digital learning app for schools students studying in classes 9 and 10.
Procurement of essential services	Andhra Pradesh: Direct procurement from the farmers using village secretariat. Maharashtra: using the network of Farmer Producer Companies for procurement so that farmers also do not lose out.
Checking Hunger	Meals made by Tihar inmates is served to around 500 people daily. The food that is left from nine prisons in the Tihar jail premises is collected and then sent to various venues.
Facilitating Money Supply	CMS Info Systems, India's largest Cash and Payments Solutions Company, has decided to offer free cash delivery (Cash2home) at home to help senior citizens and disabled.
Judicial Work	The Supreme Court has announced a slew of measures that will drastically curtail human interface in the judiciary, including options for lawyers to argue their cases through

Other Innovative measures

Zero-contact Check-up	Mobile doctor booth named "CHARAK": Designed by Indian Railways' Coach Rehabilitation Workshop, Bhopal, this will facilitate zero-contact check-ups as well as ensure the safety of the medical professionals owing to the "viral barrier chamber".
Drones for disinfection	Karimnagar Municipal Corporation, Telangana, had deployed customised drones with disinfectant liquids in Mukarampur area of Karimnagar districts.
Fodder to animals	Uttar Pradesh has made arrangements for fodder to over five lakh cows and over 1.50 lakh street dogs and monkeys to be fed daily.
Portable Multifeed Oxygen	Indian Navy developed a 'Portable Multi-feed Oxygen Manifold (MOM)'. This innovation would enable one Oxygen Bottle to supply six patients concurrently thus enabling critical care management to a larger number of COVID patients.
Engaging ASHA Workers	Anganwadi workers and Panchayati Raj institution members have been asked to

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(Odisha)	check the food availability in people's houses. Also, they have been asked to note the return of migrant labourers in their villages and whether they have gone through screening.
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ECONOMIC IMPACT OF COVID19

Microeconomic impacts	Macroeconomic impacts
It is the study of the behaviour of individual economic agents (individuals and businesses) in the markets for different goods and services and how these affect different market variables i.e.	It is concerned with large-scale or general economic factors and is determined on the basis of 4 parameters i.e.
• Demand <ul style="list-style-type: none"> o Of essentials: Stockpiling of essential commodities like rice, lintels etc. was noticed. o However, after about 10 days of lockdown, demand for vegetables, fruits dropped by 60% as bulk buyers & restaurants stayed away. o Electricity, Diesel and Petrol demand fell 9.2%, 26% and 17% respectively in March. o Of non-essential 	• Balance of payment: <ul style="list-style-type: none"> o Current account: Lower crude oil prices, slowdown in gold and other imports can reduce trade deficit. However, overseas remittances (mainly from West Asia) will also reduce. Export sector is facing over 50% cancellation due to global lockdown o Capital account: Foreign investors pulled out \$14-15 billion from Indian debt and equity

goods: out-of-home, impulse consumption in sectors like electronics, jewellery etc. is crashing. <ul style="list-style-type: none"> o Global demand has also weakened • Supply: Restrictions have affected the supply chains of big companies and only the bare essential is produced and distributed. <ul style="list-style-type: none"> o Supply of agri-produce has been affected because of no or little activity in Mandis, reduced labour, transportation problems and farmers' own reluctance, leading to low wholesale prices. o E-tailers are struggling to get permits. • Price: because of rapid changes in market conditions, prices have been very volatile. Overall, there has been a steep drop in commodity prices in emerging markets. <ul style="list-style-type: none"> • Individual expenditure: As per Axis Capital research, 	markets in March. As per RBI data, forex reserves increased during last week (March 21-27), mainly because of increased gold prices (decreased earlier). <ul style="list-style-type: none"> • Inflation: The RBI has forecasted inflation to collapse to 2.4% in the fourth quarter of FY21 amid a pronounced slump in demand. Reasons are: <ul style="list-style-type: none"> o Fall in demand because of reduced profits and income. o Distress in rural economy. • Economic Growth: <ul style="list-style-type: none"> o IMF has confirmed that world's economy is in recession that will be worse than 2009. ✓ As per World Bank, India's growth rate may slip to 1.5-2.8% in FY21, slowest since economic reforms in 1991. ✓ However, UNCTAD has kept India, along with China, as exception in world recession (without giving any detailed explanation). o Value of stalled
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discretionary spending in India may take a hit of Rs. 3.3 lakh crore per month.

- **Individual investment:** Investment outlook stands weak as per CMIE database. There is a 2% decline in new projects announced in March quarter as compared to last year.

- **Market response:** the panicked market is rushing for an exit which is evident in the form of diving stock markets.

- **Microeconomic effects of government policy:** as economic activity declines, so will taxes leading to greater fiscal deficit.

- o Direct taxes cannot be raised since profits and incomes are already badly hit.

- o Indirect taxes will be inflationary and further burden the poor and reduce demand.

- o Non-tax revenue, too, cannot be expected to contribute more since the public sector is also under stress.

- o Disinvestment targets

projects has reached record highs of around Rs. 14 trillion till Mar 2020. This may further deteriorate the asset quality of banking sector.

- o Services PMI (Purchasing Managers Index) fell to 49.3 in March after rising for 5 consecutive months.

• **Unemployment:**

- o As per latest (Centre for Monitoring India Economy) CMIE survey, labour participation rate fell to 39% in April.

- o CMIE's estimates on unemployment rate shot up from 8.4% in mid-March to 23.8% post lockdown.

- o According to ILO report, COVID-19 crisis has the potential to push around 40 crore informal sector workers in India deeper into poverty by affecting jobs/working hours and earnings

- o Recently IMF said that over 170 countries will experience negative per capita income growth this year.

of government to raise non-tax revenue are unlikely to be successful as well.

- o So, government is increasingly using Government Securities (G-secs) and some underused funds for resource mobilization.

- o Meanwhile, yield differential (Differences in the yields of different securities) between Central and State government bonds has increased from 70 basis points (bp) to 170 bp, because investors are only seeking pure sovereign backed funds amid rising pandemic related uncertainties.

Government and Regulatory Response

Objectives	Steps taken
<ul style="list-style-type: none"> • Facilitate domestic supply of essential goods and services • Ease liquidity to spur demand and investments • Help rural economy including farming 	<ul style="list-style-type: none"> • Economic relief package worth 1.7 lakh crore in the form of PM Garib Kalyan Yojana has been announced. It is likely to induce liquidity and spur demand and reduce distress in both formal and informal sectors. • Relief to exporters: <ul style="list-style-type: none"> o India has urged the countries, with which it has free trade agreements (FTAs), to allow

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<p>community to tackle the economic distress</p> <ul style="list-style-type: none"> • Plug production losses and prevent spill over effects onto corporate balance sheets (more defaults) and the labour market (job losses) • Address trade and supply chain disruptions especially for firms dependent on foreign supplies • Credit ratings should not fall • Financial intermediaries should remain competitive and asset quality should not deteriorate • Enhanced investor participation in Indian markets and improve confidence in State bonds so as to reduce 	<p>imports of goods without certificate of origin temporarily. An online portal has also been launched recently to ease the process.</p> <ul style="list-style-type: none"> o Export promotion schemes: Remission of Duties and Taxes on Exported Products (RoDTEP) has been approved and India has appealed against a WTO ruling that prohibited export related subsidies. o Export restriction of some pharmaceutical APIs has also been relaxed. • Ministry of Home Affairs has asked states to allow transportation of all goods without making a distinction of essential and non-essential during lockdown. • Farmers: <ul style="list-style-type: none"> o Shops related to truck repairs, agricultural machinery and its spare parts can remain open to facilitate transportation of farm produce. o The tea industry, including plantations, can also function with a maximum of 50% workers. o States have been advised to issue direct marketing licenses to corporates/ food processing firms to enable them to buy raw food items from farmers directly so that crowds at mandis are controlled. o Centre has asked states to 	<p>bond yields</p> <ul style="list-style-type: none"> • Stabilise the rupee as if rupee continues to weaken, firms dependent on foreign loans could struggle • Reduce/manage fiscal deficit • Maintain exports to key trading partners such as the EU 	<p>relax some provisions of Agriculture Produce Market Committee (APMC) Acts to allow farmers to sell their harvest from multiple locations and to any buyer.</p> <ul style="list-style-type: none"> o New features of National Agriculture Market (e-NAM) Platform were announced to reduce farmer's need to physically come to wholesale mandis for selling their harvested produce. • Banking sector: <ul style="list-style-type: none"> o No minimum bank balance and no charges on withdrawal from ATMs and reduced charges for digital transactions. o RBI asked Banks and other financial institutions to assess impact on their balance sheets, asset quality, liquidity and to promote digital banking among customers. o Emergency Credit Lines are being extended by some PSBs at concessional terms to borrowers whose operations are hit by the coronavirus pandemic. o Recapitalization of Regional Rural Banks (RRBs) by providing minimum regulatory capital up to 2020-21 to maintain minimum Capital to Risk weighted Assets Ratio (CRAR) of 9% has also been approved. o RBI deferred the implementation of the Capital
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Conservation Buffer (CCB) by a year, that would leave about estimated Rs 37,000 crore capital in the hands of banks, easing lending by banks.

- **Corporate sector:**

Extensions on taxation related matters to ease regulatory compliance burden, threshold of default has been increased from 1 lakh to 1 crore under I&BC and relaxations has been given to companies related to mandatory board meetings, creation of deposit reserve etc. FPI limit for corporate bonds has been raised to 15% from earlier 9%.

- Invest India business immunity platform has been launched to help businesses and investors get real-time updates on various central and state government initiatives related to COVID-19.

- MHA has asked States/UTs to take steps to support migrant workers like enabling PDS for them, involving NGOs to provide food and shelter and to ensure that students and working women from other states continue in existing accommodation.

- PM CARES Fund launched to raise resources to tackle COVID19

- Ministry of Corporate Affairs (MCA) has said spending of

CSR funds for promoting preventive care healthcare infrastructure and disaster management for COVID-19 would be treated as eligible CSR activity.

- States have been allowed to cumulatively borrow up to Rs 3.2 lakh crore (individual limits notified for States) from open market during Apr-Dec 2020 to give them more fiscal space.

- India declared COVID19 as “notified disaster” for purpose of providing assistance under State Disaster Response Fund.

- **Major steps taken by RBI to infuse liquidity:**

- o Conducting a sell/buy swap auction worth \$2 billion to arrest depreciation of Rupee.

- o RBI announced **Open Market Operations** to the tune of Rs. 10000 crores by buying government securities of 2-5-year tenors.

- o **Adopting easy money policy** by loosening policy rates such as repo rate (75 bp), reverse repo rate (90bp), MSF and CRR (100bp). This has also widened the monetary policy rate corridor that will make it attractive for banks to lend rather than to keep money with central bank (reduction in Reverse RR is larger than RR).

- o **Moratorium of 3 months**

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on loan repayments (during March 1 to May 31) on all term loans including home/ car/ working capital loans.

o **Targeted Long-term repo operations (TLTROs)**- under this, RBI conducts auctions of term repos of up to three years' tenure for a maximum Rs 1 lakh crore at a floating rate linked to repo rate. This liquidity is deployed in investment-grade corporate bonds, commercial papers and non-convertible debentures.

o **Rupee volatility:** allowed banks to deal in off-shore non-deliverable forward Rupee derivative markets from Jun 1.

o **Fully accessible route (FAR)** has been introduced as a separate route, to issue certain series of (or special) government securities (G-secs) which will attract no foreign portfolio investor (FPI) limits until maturity (overall FPI limit in G-secs is 6% presently, which may also be revised soon)

o **Ways and Means Advances (WMA)** limit has been raised by 30% for all states and UTs. (WMA facility enables government to take temporary short-term loans from RBI). RBI constituted an Advisory Committee under Sudhir Shrivastava to review the

Ways and Means limits.

Way Forward

The socio-economic costs of lockdown and resulting disruption of value chains and reverse migration of informal labour have yet to be reckoned with. But the worst may be yet to come as Indian businesses deal with the twin shocks of a health crisis and a global recession. So, the complexity of the situation—and its severity—calls for massive coordinated action and a strategic approach.

• Businesses:

o In this disruptive time, a business can improve its market share by efficient management of supply chains like diversifying suppliers to avoid supply shocks, setting up control centre and proactive collaboration with suppliers, making inventory visible online, enabling pre-ordering, end-to-end sanitization, enabling work-from-home etc.

o Tax write backs and interest free loans, particularly for small and medium enterprises can be announced.

• **Financial institutions:** IMF has estimated that emerging markets with limited domestic resources will need \$2.5 trillion to deal with the crisis.

o **Non-Banking Finance Companies (NBFCs):** they are facing twin challenges of debt repayment and cash shortage because of risk-averse nature of Banks and difficulty in managing cash flows. So, access to additional bank lines/credit is needed.

o **Banking:** risk aversion of Banks is likely to go up with rising NPAs. So, macro-prudential steps such as lowering the counter-cyclical capital buffer for banks could be announced.

o **International financial institutions:** UNCTAD has cautioned that even while liquidity injections

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are critical, a wide-spread developing country debt crisis need to be avoided through measures like temporary standstills, debt relief programmes etc. It also argued for a Marshall Plan for Health Recovery by stating that donor countries should honor their collective commitment of providing 0.7% (of global national income) as Official Development Assistance (ODA) to developing countries.

- **Socio-economic welfare measures:** Individual expenditure or consumption expenditure would play an important role in reviving the growth in the economy.

- o **Relief package** under PMGKY is just 0.9% of India's GDP as compared to USA's over 10%. Recently, UN in its report on responding to COVID-19, has recommended a double-digit percentage points stimulus package for the most vulnerable along with support to small- and medium-sized enterprises, decent work and education.

- o **Reverse migration** of informal labourers witnessed recently should be dealt by improving rural infrastructure and focusing on light industries, especially in food processing (around 40% of fruits and vegetables produced get wasted).
- o Recently, International Labour Organisation (ILO) has recommended to encourage flexible working arrangements, paid leave and access to quality emergency childcare. It also argued for consultations and collaboration among governments, workers and employers and their representatives.

RBI's COVID-19 Economic Relief Package

Reserve Bank of India's Monetary Policy Committee (MPC) has come out with its own measures to help deal with economic fall out of COVID-19 pandemic. This was the first time that

the MPC met outside its bi-monthly meeting calendar.

Four steps taken by the RBI:

- 1. Increase the liquidity in the system.**
- 2. Make sure the lower policy rate is transmitted. Steps one and two are linked.**
- 3. Give a three-month window for a payback on all term loans.**
- 4. Take steps to reduce volatility and provide stability.**

Measures announced and their impact:

1. Cut in repo rate: A big cut in the repo rate by 75 basis points (100 basis points make a per cent, so three-quarters of a percentage point) to 4.4%. A low repo rate has the overall effect of reducing interest rates for the system. Lower rates make it easier for entrepreneurs to take loans for working capital and for households for homes, vehicles and so on.

2. Cut in reverse repo rate: The ratio has been cut by 90 bps to 4%. This is the rate at which banks lend to the RBI. A reduction of the reverse repo to 4% makes it unattractive to banks to park it with the RBI and banks will be nudged to lend.

3. Moratorium on Repayments of Loans: RBI has also allowed banks to defer payment of Equated Monthly Instalments (EMIs) on home, car, personal loans as well as credit card dues for three months till May 31. The RBI also allowed lending institutions, banks to defer interest on working capital repayments by 3 months — a move aimed at addressing the distress among firms as production is down. For banks and lending institutions, this will affect their cash flows as they may not be getting repayments for three months. But the RBI has reduced their cash reserve ratio (CRR) requirements, providing them additional liquidity.

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4. Cut in Cash Reserve Ratio (CRR): The RBI reduced the cash reserve ratio (CRR) by a full percentage point down to 3% for a year. The CRR is the percentage of demand and time deposits banks have to keep with the RBI. RBI has reduced the CRR to 3%, freeing up ₹1.37 trillion for banks to lend. CRR has been chosen rather than SLR because this increases 'primary liquidity' with the banks a bit better.

5. Targeted long-term repo operations: RBI will lend money to banks (a total of ₹1 trillion) that can be invested in bonds and other forms of lending instruments. TLTRO will provide financing to credit institutions.

6. Marginal standing facility (MSF): ₹1.37 trillion will be made available under the emergency lending window called the marginal standing facility (MSF). Banks will now be able to borrow 3% of their deposits under this window, up from the current 2%. Basically, RBI is willing to lend more than before.

New measures under Pradhan Mantri Garib Kalyan Yojana

The Union Finance & Corporate Affairs Minister Smt. Nirmala Sitharaman has announced Rs 1.70 Lakh Crore relief package under Pradhan Mantri Garib Kalyan Yojana for the poor to help them fight the battle against Corona Virus.

- These measures are intended at reaching out to the poorest of the poor, with food and money in hands, so that they do not face difficulties in buying essential supplies and meeting essential needs.
- The package includes a range of measures that the Government of India will take to alleviate the economic, health, and food-related distress of India's poor.

Key components of the Pradhan Mantri Garib Kalyan Package:

1. Insurance scheme for health workers fighting COVID-19 in Government Hospitals and Health Care Centres: **What are the benefits?**

Any health professional, who while treating Covid-19 patients, meet with some accident, then he/she would be compensated with an amount of Rs 50 lakh under the scheme. Coverage:

1. All government health centres, wellness centres and hospitals of Centre as well as States would be covered under this scheme.
2. Approximately 22 lakh health workers would be provided insurance cover to fight this pandemic.
3. Safai karamcharis, ward-boys, nurses, ASHA workers, paramedics, technicians, doctors and specialists and other health workers would be covered.

2. **PM Garib Kalyan Ann Yojana:** Under this scheme, 80 crore poor people, covering about two-thirds of the country's population, will get 5 kg rice or wheat each month for the next three months free of charge, in addition to the 5 kg they already get. Each household will get 1 kg of dal of their choice, for next three months, also free of charge. Besides, to ensure adequate availability of protein to all the above mentioned individuals, 1 kg per family, would be provided pulses according to regional preferences for next three months.

3. **Benefit to farmers:** The first instalment of Rs 2,000 due in 2020-21 will be front-loaded and paid in April 2020 itself under the PM KISAN Yojana. It would cover 8.7 crore farmers.

4. **Cash transfers Under PM Garib Kalyan Yojana:** A total of 20.40 crores PMJDY women account-holders would be given an ex-gratia of Rs

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500 per month for next three months. Gas cylinders, free of cost, would be provided to 8 crore poor families for the next three months. Wage-earners below Rs 15,000 per month in businesses having less than 100 workers: Government proposes to pay 24 percent of their monthly wages into their PF accounts for next three months. Support for senior citizens (above 60 years), widows and Divyang: Government will give them Rs 1,000 to tide over difficulties during next three months. MNREGA wages would be increased by Rs 20 with effect from 1 April, 2020. Wage increase under MNREGA will provide an additional Rs 2,000 benefit annually to a worker.

5. Self-Help groups: Limit of collateral free lending would be increased from Rs 10 to Rs 20 lakhs.

6. Other components: Employees' Provident Fund Regulations will be amended to include Pandemic as the reason to allow nonrefundable advance of 75 percent of the amount or three months of the wages, whichever is lower, from their accounts. Welfare Fund for Building and Other Construction Workers: State Governments will be given directions to utilise this fund to provide assistance and support to these workers to protect them against economic disruptions.

Why these measures were necessary?

For economic agents – particularly poor households and small businesses – the crisis today is a crisis of liquidity. The nationwide lockdown, imposed to stop the novel coronavirus in its tracks, has led to scores of daily wage workers and informal sector entrepreneurs losing earning opportunities from their existing activities.

Concerns and challenges ahead:

Essentially, this package seems to reach those who are connected to bank accounts and formal payment systems. But certain groups of daily wagers and informal workers may be left out. And the real challenge would come in implementing these measures. For example, while there was sufficient surplus foodgrains available in government warehouses and an existing system for further procurement, the system for procurement of pulses needed to be created in most states.

INTERNAL MIGRATION

The recent exodus (during the 21-day lockdown) of large number of migrants (in some parts of the country) to reach their hometowns has highlighted the prevalent migrant problem.

Who are these migrants?

- **Seasonal Migrants:** Economic Survey of India 2017 estimates that there are 139 million seasonal or circular migrants in the country.
- They dominate the low-paying, hazardous and informal market jobs in key sectors in urban destinations, such as construction, hotel, textile, manufacturing, transportation, services, domestic work etc.
- Seasonal or circular migrants have markedly different labor market experiences and integration challenges than more permanent migrants but precise data and systematic accounting of their experiences are unavailable.

Why Internal Migration happens?

- **Unemployment in hinterland:** An increasing number of people do not find sufficient economic opportunities in rural areas and move instead to towns and cities.

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• **Marriage:** It is a common driver of internal migration in India, especially among women.

• **Pull-factor from cities:** Due to better employment opportunities, livelihood facilities etc cities of Mumbai, Delhi, and Kolkata are the largest destinations for internal migrants in India.

Issues that Internal Migration creates

• **Non-portability of entitlements for migrant labourers** (such as the Public Distribution System) which further gets aggravated due to absence of identity documentation.

• **Absence of reliable data:** The current data structure lacks realistic statistical account of their number and an understanding of the nature of their mobility. o Data on internal migration in India is principally drawn from two main sources – Census and the surveys carried out by the National Sample Survey Office.

✓ One of the main lacunae of both the Census and NSS surveys is their failure to adequately capture seasonal and/or short-term circular migration.

• A large majority of migrants hail from historically marginalized groups such as the SCs

and STs, which adds an additional layer of vulnerability to their urban experiences.

• **Exploitation by Employers and Contractors (Middlemen):** in the form of Non-payment of wages, physical abuse, accidents. The existing legal machinery is not sensitive to the nature of legal disputes in the unorganized sector.

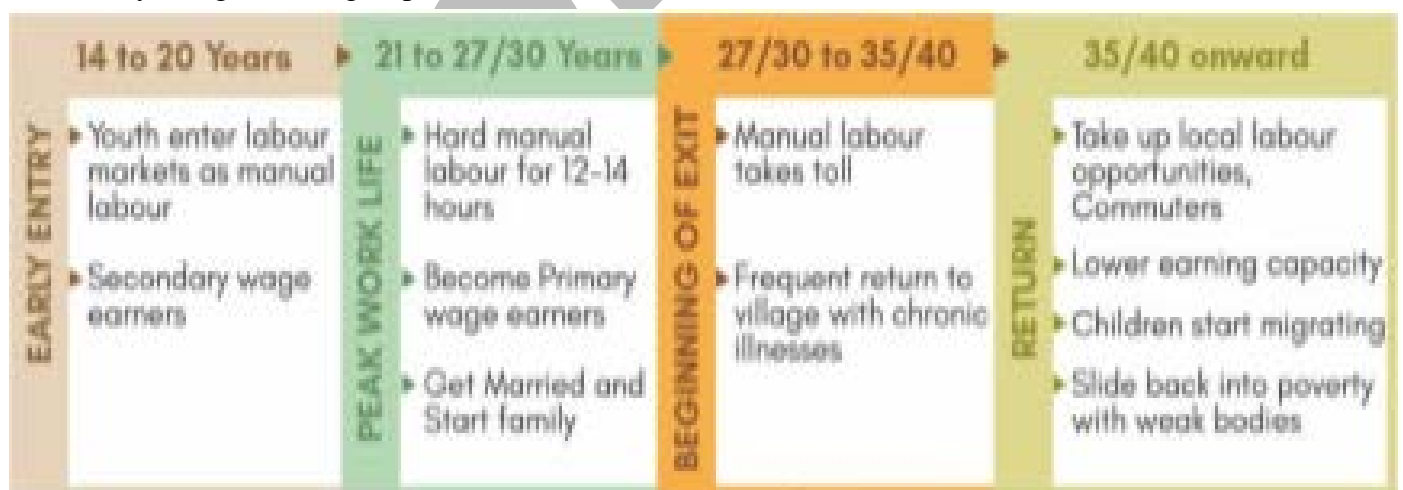
• **Lack of Education:** The issue of lack of access to education for children of migrants further aggravates the intergenerational transmission of poverty.

• **Housing:** Migration and slums are inextricably linked, as labor demand in cities and the resulting rural-to-urban migration creates greater pressures to accommodate more people.

• **Social Exclusion:** Since the local language and culture is different from that of their region of origin they also face harassment and political exclusion.

o Due to migrant's mobile nature, they don't find any place in the manifestos of trade unions.

• **Stuck in the cycle of poverty:** Most migrants are generationally stuck in a vicious cycle of poverty. (*See infographic.*)



What can be done?

• **Universal foodgrain distribution:** There are 585 lakh tonnes of grains stored in Food

Corporation of India godowns, which could be proactively distributed.

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- **Direct cash transfers:** Mechanisms could be evolved to deliver cash directly into the hands of people, instead of routing it through bank accounts.
- Inter-state coordination committee could be formed to ensure safe passage of migrants to their villages.
- Legal cell at the central and state levels could be created to protect wages. As there have been claims of nonpayment of wages, forced leaves and retrenchments.
- **Mapping of migrant workers:** There is a need to create a database to map migrant workers scattered across the country. o Government is planning to map migrant workers which would be first comprehensive exercise to map migrant workers scattered across sectors.

Way forward

The challenges of the migrant problem are complex, also lack of recognition for migrants is still to be fully addressed. But if policy makers are able to recognize migrant workers as a dynamic part of a changing India, migration instead of being part of the problem will start becoming part of the solution.

WORK CULTURE IN TIMES OF WORK FROM HOME

The recent Coronavirus (COVID-19) outbreak has forced various organizations to enable work from home. This may result in alteration of prevalent work culture of an organization.

Why is work culture important?

- Higher Engagement: When employees clearly identify with a company's principles, they're more likely to engage with their work. Several studies have highlighted that companies with high

engagement have higher customer loyalty, productivity, and profitability than their peers.

- Attracting talent: Organizations with an engaged workforce and a clear culture in place are more likely to attract top talent.
- Company's identity: Work culture reflects the work of an organization and hence has the potential to create a good or bad image among its customers and partners.
- Employee satisfaction: An organization with a strong work culture generates a feeling among employees that what they do is important. This drastically boosts the work satisfaction.
 - o Employees who feel like they're part of a community, rather than a cog in a wheel, are more likely to stay in the organization.

Does work from home disturb the current setup? : Yes

- Colleagues and teams being siloed from each other: Working from home can create a scenario where teams interact in a small group or not at all, this communication gap can weaken the work culture significantly.
- Feelings of isolation among remote employees: Working from home can create anxiety among employees if they lack clarity on what is expected of them.
- Enthusiasm about building and growing a business is harder to foster. This is because employees may start viewing the relationship with the organization as transactional and hence are less passionate about its vision.
- It is difficult to achieve the level of trust, connection and mutual purpose when working from home vis-à-vis working from an office.

But is work from home completely bad for work culture? : No

- Lesser distractions and increased productivity: Studies have shown that concentration levels are

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higher when people are allowed to work from home and productivity may also increase because of a more flexible environment, no commute time, better work-life balance and relatively more relaxed state of mind.

- **Telecommunication:** Communication with wider number of teammates is possible through internet based video/mail services which may not be possible even in physical setting. For example: coordination among employees in different cities and flexibility in team formation.
- **Bigger talent pool:** Employers can hire the best of the best talent while not limiting themselves by geographical restrictions. This can reinforce positive work culture i.e. work culture based on achievement orientation and hard work.
- **Higher Retention:** above reasons will facilitate better job satisfaction resulting into more dedication and responsibility.

Making Work from home work: Way Forward

- **Clear expectations for every employee:** Employees who understand responsibilities and deadlines can work to exceed them, while avoiding the anxiety of wondering where they stand with their team and manager.
- **Clear schedule and regular check-ins:** Maintaining a clear and consistent schedule ensures professionalism and maintains discipline in work from home.
- **Personal touch:** Regularly checking on employee's well-being does not let the bond between employee and organization weaken.
- **Using technology to simulate reality as far as possible:** Ideas like video-conferencing, shared work platforms and instant messaging keeps the work flow stimulated.
- **Engage and coach your remote employee:** Work from home cannot have a one-size-fits-all template for all organizations. So the employees

need to be mentored on the dos and don'ts to realize its benefits.

Apart of above, employees could be encouraged to meet in person for celebrations, team successes and also individual successes. This will help reinforce the work culture time and again. At the end of the day, culture isn't tied to a place but is a collective mind-set of all people part of the organization.

Work Culture

- Work culture can be understood as a concept which encompasses beliefs, thought processes and attitudes of the employees.
- Also, these beliefs and attitudes in turn shape and are shaped by ideologies and principles of the organization.

Work from home: India specific issues

- **Lack of Infrastructure:** There is absence of reliable internet connectivity especially outside metro cities.
- **Problem of Privacy:** Family members sometimes might unconsciously thwart employee's privacy. This could result in distractions and might affect the quality of work.
- **Cultural Stigma:** There are prevalent preconceived notions about people working remotely such as s/he is lazy or socially awkward.
- **Work culture in most organizations in India** relies on complete control by manager or team leader. Work from home could disrupt this control structure.

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Part-2

1) What is a Schedule H1 Drug?

The government has notified anti-malarial drug hydroxychloroquine under Schedule-H1. This was done in exercise of its powers conferred by Section 26B of the Drugs and Cosmetics Act, 1940 (23 of 1940).

- The move is aimed at stopping misuse of the drug which has now been allowed by the government for prophylactic use in high risk contacts of Covid-19 patients and healthcare workers treating such patients.

Implications of this classification:

- It restricts its sale only based on prescription.
- The sale of the drug from now on should be in accordance with the conditions for sale of drugs as specified in Schedule H1 to the Drugs and Cosmetics Rules, 1945.

This would mean that any preparation containing the said drug will have a warning label of 'only prescription sale' and against self-medication.

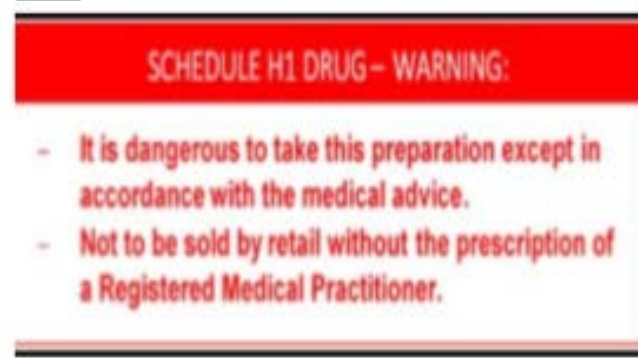
- Additionally, chemists would need to maintain records for name and address of the prescriber, the name of the patient, the name of the drug and the quantity supplied and such records shall be maintained for three years and be open for inspection.

What are Schedule H1 Drugs?

The Drugs and Cosmetics Rules, 1945, are the set of rules under The Drugs and Cosmetics Act, 1940, which has provisions for classification of drugs into different schedules and also guidelines for storage, sale, display. Schedule H1 has been introduced through Gazette notification GSR 588 (E) dated 30-08-2013 to check the indiscriminate use of antibiotics, anti-TB and some other drugs in the country. The schedule contains certain 3rd and 4th generation antibiotics, certain habit forming drugs and anti-TB drugs.

As per government notification, these drugs are required to be sold in the country with the following conditions:

1. The supply of a drug specified in Schedule H1 shall be recorded in a separate register at the time of the supply giving the name and address of the prescriber, the name of the patient, the name of the drug and the quantity supplied and such records shall be maintained for three years and be open for inspection.
2. The drug specified in Schedule H1 shall be labelled with the symbol Rx which shall be in red and conspicuously displayed on the left top corner of the label, and shall also be labelled with the following words in a box with a red border:



2) Why has Kerala sought a relaxation of FRBM rules

To help fund the emergency relief package, Kerala proposes to borrow as much as ₹12,500 crore from the market in April itself and therefore the Chief Minister has urged the Centre to provide Kerala with flexibility under the Fiscal Responsibility and Budget Management (FRBM) Act so as to ensure that the State's finances are not adversely impacted in the rest of the financial year starting on April 1.

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Background: Kerala was one of the earliest States to announce an economic package of ₹20,000 crore to mitigate the impact on livelihoods and overall economic activity from the sweeping steps taken to battle the COVID-19 pandemic, including the latest 21-day nationwide lockdown.

How does a relaxation of the FRBM work? The law does contain what is commonly referred to as an 'escape clause'. Under Section 4(2) of the Act, the Centre can exceed the annual fiscal deficit target citing grounds that include national security, war, national calamity, collapse of agriculture, structural reforms and decline in real output growth of a quarter by at least three percentage points below the average of the previous four quarters.

What is the FRBM Act?

The Fiscal Responsibility and Budget Management Act (FRBM Act), 2003, establishes financial discipline to reduce fiscal deficit.

What are the objectives of the FRBM Act?

1. The FRBM Act aims to introduce transparency in India's fiscal management systems.
2. The Act's long-term objective is for India to achieve fiscal stability and to give the Reserve Bank of India (RBI) flexibility to deal with inflation in India.
3. The Act was enacted to introduce more equitable distribution of India's debt over the years.

Key features of the FRBM Act: The FRBM Act made it mandatory for the government to place the following along with the Union Budget documents in Parliament annually:

1. Medium Term Fiscal Policy Statement.
2. Macroeconomic Framework Statement.
3. Fiscal Policy Strategy Statement.

The FRBM Act proposed that revenue deficit, fiscal deficit, tax revenue and the total outstanding

liabilities be projected as a percentage of gross domestic product (GDP) in the medium-term fiscal policy statement.

Amendments: The Act has been amended several times. In 2013, the government introduced a change and introduced the concept of effective revenue deficit. This implies that effective revenue deficit would be equal to revenue deficit minus grants to states for the creation of capital assets.

In 2016, a committee under N K Singh was set up to suggest changes to the Act. According to the government, the targets set under FRBM Act previously were too rigid.

N K Singh Committee's recommendations were as follows:

Targets: The committee suggested using debt as the primary target for fiscal policy and that the target must be achieved by 2023.

Fiscal Council: The committee proposed to create an autonomous Fiscal Council with a chairperson and two members appointed by the Centre (not employees of the government at the time of appointment).

Deviations: The committee suggested that the grounds for the government to deviate from the FRBM Act targets should be clearly specified

Borrowings: According to the suggestions of the committee, the government must not borrow from the RBI, except when:

1. The Centre has to meet a temporary shortfall in receipts.
2. RBI subscribes to government securities to finance any deviations.
3. RBI purchases government securities from the secondary market.

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3) New measures under Pradhan Mantri Garib Kalyan Yojana

The Union Finance & Corporate Affairs Minister Smt. Nirmala Sitharaman has announced Rs 1.70 Lakh Crore relief package under Pradhan Mantri Garib Kalyan Yojana for the poor to help them fight the battle against Corona Virus.

- These measures are intended at reaching out to the poorest of the poor, with food and money in hands, so that they do not face difficulties in buying essential supplies and meeting essential needs.
- The package includes a range of measures that the Government of India will take to alleviate the economic, health, and food-related distress of India's poor.

Key components of the Pradhan Mantri Garib Kalyan Package:

1. Insurance scheme for health workers fighting COVID-19 in Government Hospitals and Health Care Centres: What are the benefits?

Any health professional, who while treating Covid-19 patients, meet with some accident, then he/she would be compensated with an amount of Rs 50 lakh under the scheme.

Coverage:

1. All government health centres, wellness centres and hospitals of Centre as well as States would be covered under this scheme.
2. Approximately 22 lakh health workers would be provided insurance cover to fight this pandemic.
3. Safai karamcharis, ward-boys, nurses, ASHA workers, paramedics, technicians, doctors and specialists and other health workers would be covered.
2. **PM Garib Kalyan Ann Yojana:** Under this scheme, 80 crore poor people, covering about

two-thirds of the country's population, will get 5 kg rice or wheat each month for the next three months free of charge, in addition to the 5 kg they already get. Each household will get 1 kg of dal of their choice, for next three months, also free of charge. Besides, to ensure adequate availability of protein to all the above mentioned individuals, 1 kg per family, would be provided pulses according to regional preferences for next three months.

3. Benefit to farmers: The first instalment of Rs 2,000 due in 2020-21 will be front-loaded and paid in April 2020 itself under the PM KISAN Yojana. It would cover 8.7 crore farmers.

4. Cash transfers Under PM Garib Kalyan Yojana: A total of 20.40 crores PMJDY women account-holders would be given an ex-gratia of Rs 500 per month for next three months. Gas cylinders, free of cost, would be provided to 8 crore poor families for the next three months. Wage-earners below Rs 15,000 per month in businesses having less than 100 workers: Government proposes to pay 24 percent of their monthly wages into their PF accounts for next three months. Support for senior citizens (above 60 years), widows and Divyang: Government will give them Rs 1,000 to tide over difficulties during next three months. MNREGA wages would be increased by Rs 20 with effect from 1 April, 2020. Wage increase under MNREGA will provide an additional Rs 2,000 benefit annually to a worker.

5. Self-Help groups: Limit of collateral free lending would be increased from Rs 10 to Rs 20 lakhs.

6. Other components: Employees' Provident Fund Regulations will be amended to include Pandemic as the reason to allow nonrefundable advance of 75 percent of the amount or three months of the wages, whichever is lower, from their accounts. Welfare Fund for Building and

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Other Construction Workers: State Governments will be given directions to utilise this fund to provide assistance and support to these workers to protect them against economic disruptions.

Why these measures were necessary?

For economic agents – particularly poor households and small businesses – the crisis today is a crisis of liquidity. The nationwide lockdown, imposed to stop the novel coronavirus in its tracks, has led to scores of daily wage workers and informal sector entrepreneurs losing earning opportunities from their existing activities.

Concerns and challenges ahead: Essentially, this package seems to reach those who are connected to bank accounts and formal payment systems. But certain groups of daily wagers and informal workers may be left out. And the real challenge would come in implementing these measures. For example, while there was sufficient surplus foodgrains available in government warehouses and an existing system for further procurement, the system for procurement of pulses needed to be created in most states.

Sources: pib.

4) Business Immunity Platform

Invest India has launched The Invest India Business Immunity Platform.

About Business Immunity Platform:

1. The platform is designed as a comprehensive resource to help businesses and investors get real-time updates on India's active response to COVID-19 (Coronavirus).
2. This dynamic and constantly updating platform keeps a regular track on developments with respect to the virus, provides latest information on various central and state government initiatives, gives access to special provisions, and answers

and resolves queries through emails and on WhatsApp.

3. It is the active platform for business issue redressal, operating 24/7, with a team of dedicated sector experts and responding to queries at the earliest.

What is Invest India?

- Invest India is the National Investment Promotion and Facilitation Agency of India, set up as a nonprofit venture under the aegis of Department of Industrial Policy & Promotion, Ministry of Commerce and Industry, Government of India.
- It facilitates and empowers all investors under the 'Make in India' initiative to establish, operate and expand their businesses in India.
- Operationalized in early 2010, Invest India is set up as a joint venture company between the Department of Industrial Policy & Promotion (DIPP) (now renamed as Department for Promotion of Industry and Internal Trade (DPIIT)), Ministry of Commerce & Industry (35% equity), Federation of Indian Chambers of Commerce and Industry (FICCI) (51% equity), and State Governments of India (0.5% each).

Sources: pib.

5) National Teleconsultation Centre (CoNTeC)

Union Ministry of Health & Family Welfare has launched the National Teleconsultation Centre (CoNTeC).

- The project CoNTeC, an acronym for COVID-19 National Teleconsultation Centre, has been conceptualised by the Ministry of Health & Family Welfare and has been implemented by the All India Institute of Medical Sciences, New Delhi.

How it works?

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- The CoNTeC is a Telemedicine Hub established by AIIMS, New Delhi, wherein expert doctors from various clinical domains will be available 24x7 to answer the multifaceted questions from specialists from all over the country.
- It is a multi-modal telecommunications hub through which 2-way audio-video and text communications can be undertaken from any part of the country as well as the world at large.
- The modes of communication will include simple mobile telephony as well as two way video communications, using WhatsApp, Skype and Google Duo.

How to Contact the CoNTeC?

A single mobile number (+91 9115444155) can be dialled from anywhere in the country/world by COVID-19 treating doctors to reach the CoNTeC which has six lines that can be used simultaneously at present.

Sources: pib.

6) State Disaster Response Fund (SDRF)

Ministry of Home Affairs decided to treat COVID-19 as a notified disaster for the purpose of providing assistance under the State Disaster Response Fund (SDRF).

What is a disaster?

- According to the Disaster Management Act, a disaster is defined as the following, “a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the

coping capacity of the community of the affected area”.

- Ministry of Home Affairs has defined a disaster as an “extreme disruption of the functioning of a society that causes widespread human, material, or environmental losses that exceed the ability of the affected society to cope with its own resources.”
- 31 disaster categories are organised into five major sub-groups, which are: water and climate related disasters, geological related disasters, chemical, industrial and nuclear related disasters and biological related disasters, which includes biological disasters and epidemics.

What is the State Disaster Response Fund?

Constituted under the Disaster Management Act, 2005 by respective states and it is the primary fund available with state governments for responses to notified disasters. Composition: The Central government contributes 75 per cent towards the SDRF allocation for general category states and UTs, and over 90 per cent for special category states/UTs, which includes northeastern states, Sikkim, Himachal Pradesh and Uttarakhand). For SDRF, the Centre releases funds in two equal installments as per the recommendation of the Finance Commission. Support from the National Disaster Response Fund: it supplements the SDRF of a state, in case of a disaster of severe nature, provided adequate funds are not available in the SDRF. The disasters covered under the SDRF include cyclones, droughts, tsunamis, hailstorms, landslides, avalanches and pest attacks among others. Deciding authority: The state executive committee headed by the Chief Secretary is authorized to decide on all matters relating to the financing of the relief expenditure from the SDRF.

Features of SDRF:

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1. SDRF is located in the 'Public Account' under 'Reserve Fund'. (But direct expenditures are not made from Public Account.)

2. State Government has to pay interest on a half yearly basis to the funds in SDRF, at the rate applicable to overdrafts.

3. The aggregate size of the SDRF for each state, for each year, is as per the recommendations of the Finance Commission.

4. The share of GoI to the SDRF is treated as a 'grant in aid'.

5. The financing of relief measures out of SDRF are decided by the State Executive Committee (SEC) constituted under Section 20 of the DM Act. SEC is responsible for the overall administration of the SDRF. However, the administrative expenses of SEC are borne by the State Government from its normal budgetary provisions and not from the SDRF or NDRF.

6. The norms regarding the amount to be incurred on each approved item of expenditure (type of disaster) are fixed by the Ministry of Home Affairs with the concurrence of Ministry of Finance. Any excess expenditure has to be borne out of the budget of the state government.

7. Ministry of Home Affairs is the nodal ministry for overseeing the operation of the SDRF and monitors compliance with prescribed processes.

8. Comptroller and Auditor General of India (CAG) audit the SDRF every year.

7) PHARMACEUTICAL AND MEDICAL DEVICES INDUSTRY IN INDIA

Recently, Cabinet approved a series of Schemes to give an impetus to the Pharmaceutical and Medical Devices Industries in India.

Background

- India is the largest provider of generic medicines globally, occupying a 20% share in global supply by volume, and also supplies 50% of global demand for vaccines. (Leader in Global Supply of DPT (Diphtheria, Tetanus, Pertussis), BCG (Bacillus Calmette-Guérin) and Measles Vaccine)
- o India ranks 3rd worldwide for production by volume and 13th by value.

- o India is the source of 60,000 generic brands and manufactures more than 500 different Active Pharmaceutical Ingredients (APIs).

- o The pharmaceutical industry was valued at \$ 36.7 bn in 2018 and is expected to reach \$ 55 bn over 2015-20.

- o 100% Foreign Direct Investment (FDI) is allowed under the automatic route for greenfield pharma.

- o The Department of Pharmaceuticals aims to make the country a hub for end-to-end drug discovery under its 'Pharma Vision 2020'.

- Medical Device is also growing sector and its potential for growth is the highest among all sectors in the healthcare market.

- o It is valued at Rs. 50,026 crores for the year 2018-19.

- o Medical devices are segregated into different major segments, of which equipment and instruments (surgical and non-surgical) form the largest portion. ✓ Other segments include Consumables and Disposables; Patient Aid; Implants; Stents etc.

- o India depends on imports up to an extent of 85% of total domestic demand of medical devices. In some specific bulk drugs, the import dependence is 80 to 100%.

Challenges of Pharmaceutical and Medical Devices Industry

- Global factors: Globally, following aspects have led to a severe impact on exports in

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manufacturing, which have also brought a slowdown in the domestic market. These include-

- o higher level of customer consolidation,
- o increased competition & number of products approvals,
- o decreased value from new product launches
- o increased pricing control & protectionism.

• **Generic Drugs sector facing challenges:** Our strong position as a global supplier of high quality, affordable and accessible generic medicines has been impacted due to recent compliance challenges and low productivities.

• **Evolving regulatory landscape:** Several interventions over the years have had an impact across the value chain- from development, manufacturing and supply chain to pricing and customer engagement.

o Compliance issues are affecting the reliability of supply as while many Indian companies have fared well in regulatory audits others continue to face challenges.

• **Import dependency:** India continues to rely on imports of key starting materials, intermediates and APIs for, China. This potentially exposes us to raw material supply disruptions and pricing volatility.

o The industry should therefore, also explore alternate sourcing locations (such as Vietnam, Indonesia) while indigenous capabilities & capabilities ramp up.

o Recent lockdown in China due to COVID 19 had caused disruption in Indian pharmaceutical industry.

• **Inadequate R&D:** The Indian pharma industry faces lack of research components and real time good manufacturing practices.

o The government should promote incubators' establishment to establish small scale, raw material manufacturing units/ incubators in all states of the country.

• **Manufacturing disability:** The medical device sector suffers from a cost of manufacturing disability of around 12 to 15 %, vis-a-vis competing economies, among other factors, on account of

- o lack of adequate infrastructure,
- o domestic supply chain and logistics,
- o high cost of finance,
- o limited design capabilities

• **Medical devices,** are dependent on a mix of technologies such as engineering, electronics, material sciences and information technology. However, India has not been able to bridge the gap between investments, skilled resources and innovation to fully capitalize on these opportunities.

In the light of above challenges the Union government has therefore, approved these New Schemes to boost Manufacturing of Medical Devices as well as Bulk Drugs production in India:

About the Schemes

• **Promotion of Medical Device Parks:** It aims to promote Medical Device Parks in the country in partnership with the States. A maximum grant-in-aid of Rs.100 crore per park will be provided to the States.

o It will be implemented by a State Implementing Agency (SIA).

o The target is to provide financial assistance for Common Infrastructure Facilities for 4 Medical Device parks.

• **Production Linked Incentive Scheme** for promoting domestic manufacturing of medical devices: Incentive @ 5% of incremental sales over base year 2019-20 will be provided on the segments of medical devices identified under the Scheme.

o It will be implemented by a Project

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Management Agency (PMA) to be nominated by Department of Pharmaceuticals.

o The target is to aid about 25-30 manufacturers under the following categories of medical devices:

-

- ✓ Cancer care/Radiotherapy medical devices,
- ✓ Radiology & Imaging medical devices and Nuclear Imaging Devices,
- ✓ Anaesthetics & Cardio-Respiratory medical devices

✓ All Implants including implantable electronic devices like Cochlear Implants and Pacemakers.

• Promotion of Bulk Drug Parks: Under this scheme,

o Decision is to develop 3 mega Bulk Drug parks in India in partnership with States.

o Government of India will give Grants-in-Aid to States with a maximum limit of Rs. 1000 Crore per Bulk Drug Park.

o Parks will have common facilities such as solvent recovery plant, distillation plant, power & steam units, common effluent treatment plant etc.

o A sum of Rs. 3,000 crores have been approved for this scheme for next 5 years.

o It will be implemented by State Implementing Agencies (SIA) to be set up by the respective State Governments.

• Production Linked Incentive Scheme for promotion of domestic manufacturing of critical KSMs/Drug Intermediates and APIs

o Financial incentive will be given only to eligible manufacturers of identified 53 critical bulk drugs on their incremental sales over the base year (2019-20) for a period of 6 years.

o A sum of Rs. 6,940 crores have been approved for next 8 years.

o The scheme will be implemented through a Project Management Agency (PMA) to be nominated by the Department of Pharmaceuticals.

Significance of the Schemes

- Providing affordable healthcare.
- Way to achieve self-reliance.
- Role of China: China supplies around two-thirds of India's pharmaceutical raw materials, and in certain segments like antibiotics, the proportion is as high as 90%. The issue gains significance after the novel coronavirus epidemic shut down factories in China, which in turn hit supplies of raw materials.
- Achieving economy of scale.
- Attracting investment.
- Providing hand-holding support to the manufacturers.
- Generate an additional employment of 33,750 jobs over a period of five years.

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Pharmaceutical Industry: Growth Drivers Demand-side Factors

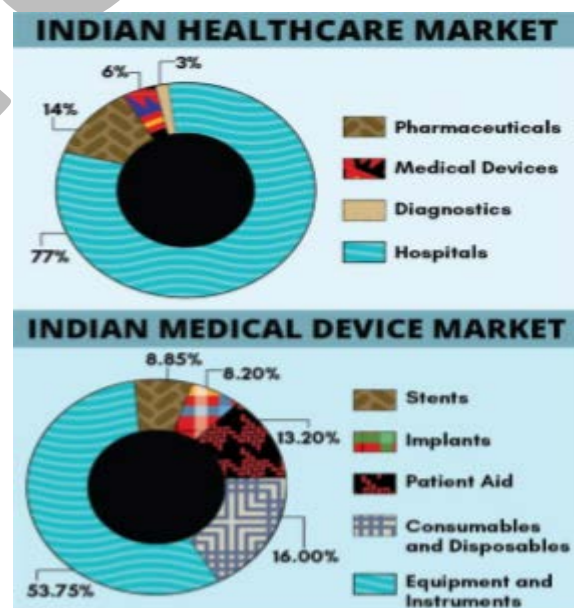
- **Accessibility:** Over \$200 Billion to be spent on medical infrastructure in the next decade.
- **Affordability:** Rising income could drive 73 million households to the middle class over the next 10 years.
- **Epidemiological Factors:** Patient pool expected to increase over 20% in the next 10 years, mainly due to the rise in population, New diseases & lifestyle changes.

Supply-side Factors

- **Patented Drugs:** Following the introduction of product patents, several multinational companies are expected to launch patented drugs in India
- **Medical Infrastructure:** Pharma companies have increased spending to tap rural markets and develop better medical infrastructure. Hospitals' market size is expected to increase by 2024.
- **Cost Efficiency:** India's cost of production is nearly 33 % lower than that of the US and almost half of that of Europe.
- **Generics Market:** India's generics drug market accounts for around 70% of the India pharmaceutical industry.
- **Talent Pool:** India has a skilled workforce as well as high managerial and technical competence in comparison to its peers in Asia.

Medical Devices Sector: Growth Drivers

- **Nascent industry:** Importing more than 90% of sophisticated devices, the domestic industry has a huge scope for R&D capacity.
- **Demographics:** Ageing population, life expectancy to cross 70 years by 2022, thereby requiring home-based healthcare devices.
- **Increasing disposable income:** 8% Indians could earn more than \$ 12,000 p.a. by 2026
- **Industrial Parks:** 4 medical devices parks in India are under-development.
- **Government commitment:** New rules and regulatory processes for the medical devices sector, 100% FDI allowed etc.



8) PRADHAN MANTRI GARIB KALYAN YOJANA

Finance Minister announced Rs 1.70 Lakh Crore relief package under Pradhan Mantri Garib Kalyan

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Yojana for the poor to help them fight the battle against Corona Virus.

Salient features			
Scheme components	Beneficiaries	Total number of beneficiaries	Benefits
Insurance scheme for health workers fighting COVID-19	It covers public healthcare workers like Safai karamcharis, nurses, ASHA workers, paramedics, technicians, doctors etc. working in Central/State governmental hospitals or health/ wellness centres.	Around 22 lakh health workers	<ul style="list-style-type: none"> 50 lakh insurance cover is provided for 90 days in case any health professional, who while treating COVID-19 patients meet with some accident or is at some risk of being impacted. Private healthcare provider requisitioned by hospitals related to government, for COVID-19 related responsibilities. This benefit will be over and above any other insurance cover being availed of by the beneficiary.
PM Garib Kalyan Ann Yojana	Poor households getting benefits from PDS	80 crore	<ul style="list-style-type: none"> Free 5kg of wheat or rice per person per month over and above present entitlement under Public Distribution System, which is 5kg wheat or rice. Also, Free 1 kg of pulses per family.
PM-Kisan	Farmers	8.7 crore	Transfer of Rs. 2000 in April
Cash transfers under PM Garib Kalyan Yojana	MGNREGA workers	13.62 crore families	Wage hiked to 202 from 182 w.e.f. April 1. Each worker to get Rs. 2000 additional
	women beneficiaries under the scheme (Ujjwala Yojana)	8.3 crore families	Free gas cylinders for April-June
	Women Jan Dhan account holders	20.40 crore women	Rs. 500/month for April-June
	Vulnerable Senior citizens, widows, Divyangs	3 crore	Ex-gratia of Rs. 1000/month during April-June
	Organizations with up to 100 employees, out of which 90% are having wage less than Rs. 15000/month	80 lakh employees	Government to pay 24 % of their monthly wages into their PF accounts for next three months.
Self-Help groups (SHGs)	SHGs	63 lakh SHGs benefiting 6.85 crore households	Limit for collateral free loan raised to Rs 20 lakh from Rs 10 lakh
Other components of PM Garib Kalyan package	Workers registered under EPF	4.8 crore workers	EPF Regulations will be amended to include Pandemic as the reason to allow non-refundable withdrawal up to 75% of three months wages, whichever is lower
	Building and Other Construction Workers	3.5 Crore registered workers	<ul style="list-style-type: none"> All States/UTs were advised to transfer funds in the account of construction workers through DBT mode from the Cess fund collected and constituted by the Building and Other Construction Workers (BOCW) Welfare Boards under the BOCW cess Act, 1996. Workers should be registered under Building and Other Construction Workers Welfare Fund (cess fund) to avail the benefit.
	Those covered under Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)	-	District Mineral Fund (DMF) funds will be utilized for supplementing and augmenting facilities of medical testing, screening as well as treating the patients affected with this pandemic.

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- 2013 when the average score was 140 in Geo our students scored 200+ (Isha Dhuna, Nitin Agarwal and Aditya uppal)
- 2014 when average score is 230 our students scored 280-300 (Aditya uppal RANK-19 309 marks)
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All the Best to all my Economics students...

Hope this material will help you.

God bless...JAI Hind

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