

# PERFECT 7

**Weekly  
Current Affairs**

An Initiative of Dhyeya IAS



## 1 | World Ocean Day 2020

Innovation for Sustainable Ocean

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## DHYEYA IAS : AN INTRODUCTION



**Vinay Kumar Singh**  
**Founder & CEO**

**T**he guiding philosophy of the institute, throughout, has been creation of knowledge base. Dhyeya IAS inculcates human values and professional ethics in the students, which help them make decisions and create path that are good not only for them, but also for the society, for the nation, and for the world as whole. To fulfill its mission in new and powerful ways, each student is motivated to strive towards achieving excellence in every endeavor. It is done by making continuous improvements in curricula and pedagogical tools.

The rigorous syllabi not only instills in them, a passion for knowledge but also attempts to teach them how to apply that knowledge in real-life situations. The programmes lay emphasis on well-rounded personality development of the students and also in inculcating the values of honesty and integrity in them.



**Q.H. Khan**  
**Managing Director**

**D**hyeya IAS is an institution that aims at the complete development of the student. Our faculty are hand-picked and highly qualified to ensure that the students are given every possible support in all their academic endeavors. It is a multi-disciplinary institution which ensures that the students have ready access to a wide range of academic material. Our brand of education has broad horizons as we believe in exposure. Our students are encouraged to widen their knowledge base and study beyond the confinements of the syllabus. We aim to lend a gentle guiding hand to make our students recognize their inner potential and grow on their own accord into stalwarts of tomorrow's society.



## PERFECT 7 : AN INTRODUCTION



**Kurban Ali**  
**Chief Editor**

**W**ith immense pleasure I would like to inform you that the new version of 'Perfect 7', from the Dhyeya IAS, is coming with more information in a very attractive manner. Heartily congratulations to the editorial team. The 'Perfect 7' invites a wider readership in the Institute. The name and fame of an institute depends on the caliber and achievements of the students and teachers. The role of the teacher is to nurture the skills and talents of the students as a facilitator. This magazine is going to showcase the strength of our Institute. Let this be a forum to exhibit the potential of faculties, eminent writers, authors and students with their literary skills and innovative ideas.

Please do visit our website [www.dhyeyaias.com](http://www.dhyeyaias.com) and our youtube channel for regular and updated information on current affairs.



**Ashutosh Singh**  
**Managing Editor**

**W**e have not only given the name 'Perfect 7' to our magazine, but also left no stone unturned to keep it 'near to perfect'. We all know that beginning of a task is most vital and full of challenges. So we met the same fate.

Publishing 'Perfect 7' provided us various challenges because from the beginning itself we kept our bar too high to ensure the quality. Right from the very first issue we had a daunting task to save aspirants from the 'misinformation' or 'overdose of information'. Focussing on civil services examination 'Perfect 7' embodies in itself perfect friend and guide in your preparation. This weapon is built to be precise yet comprehensive. It is not about bombardment of mindless facts, rather an analysis of various facets of the issues, selected in a systematic manner. We adopted the 'Multi Filter' and 'Six Sigma' approach, in which a subject or an issue is selected after diligent discussion on various levels so that the questions in the examination could be covered with high probability.

Being a weekly magazine there is a constant challenge to provide qualitative study material in a time bound approach. It is our humble achievement that we feel proud to make delivered our promise of quality consistently without missing any issue since its inception.

Your suggestions and popular demands always motivate us and keep our morale high.

May this version of 'Perfect 7' instill a new energy and a new spirit in you. We wish that the bond of affection between you and Dhyeya IAS reaches at a new height.



Send us your suggestions, comment, views and feedback for guiding us on

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## PREFACE



**D**hyeya family has decided to bring a new colourful and vibrant version of **'Perfect 7'** – a panacea for current affairs, which will add positive and dynamic energy in your preparation.

**'Perfect7'** is an outstanding compilation of current affairs topics as per the new pattern of Civil Services Examination (CSE). It presents weekly analysis of information and issues (national and international) in the form of Articles, News Analysis, Brain Boosters, PIB Highlights and Graphical Information, which helps to understand and retain the information comprehensively. Hence, **'Perfect 7'** will build in-depth understanding of various issues in different facets.

**'Perfect7'** is our genuine effort to provide correct, concise and concrete information, which helps students to crack the CSE. This magazine is the result of the efforts of the eminent scholars and the experts from different fields. **'Perfect 7'** is surely a force multiplier in your effort and plugs the loopholes in the preparation.

We believe in environment of continuous improvement and learning. Your constructive suggestions and comments are always welcome, which could guide us in further revision of this magazine.

**Omveer Singh Chaudhary**

Editor  
Dhyeya IAS

**A**s a proud jewel of Dhyeya IAS, **'Perfect 7'** now comes in a new coloured avatar. **'Perfect 7'** is a quintessential part of your preparation strategy for Civil Services Examination. A regular and manageable dose of current affairs will now reach you in new format, making it more reader friendly. Our humble attempt to serve you is surely rewarded by your appreciations. It encourages us to innovate and provide the best as per our ability.

A dedicated team of experts at Dhyeya IAS toils night and day to make your dream of Civil Services come true. I heartily thank and express my gratitude to the esteemed readers and all the people involved in making this magazine a shining star in the galaxy of Dhyeya IAS.

**Rajat Jhingan**

Editor  
Dhyeya IAS



# PERFECT 7

**Weekly Current Affairs**

An Initiative of Dhyeya IAS

JUNE 2020 | ISSUE 05

## OUR TEAM

|                           |                                                                                  |
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| Managing Director         | ➤ Q. H. Khan                                                                     |
| Chief Editor              | ➤ Qurban Ali                                                                     |
| Managing Editor           | ➤ Ashutosh Singh                                                                 |
| Editors                   | ➤ Omveer Singh Chaudhary<br>➤ Rajat Jhingan<br>➤ Jeet Singh<br>➤ Avaneesh Pandey |
| Editorial Support         | ➤ Prof. R. Kumar                                                                 |
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| Graphics                  | ➤ Krishna Kumar<br>➤ Krishna Kant Mandal<br>➤ Mukund Patel                       |
| Office Assistants         | ➤ Hari Ram<br>➤ Raju Yadav                                                       |

### Content Office



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DHYEYA IAS  
302, A-10/II, Bhandari House,  
Near Chawla Restaurants,  
Dr. Mukherjee Nagar,  
Delhi-110009



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## OUR OTHER INITIATIVES



Hindi & English  
Current Affairs  
Monthly  
News Paper



DHYEYA TV  
Current Affairs Programmes hosted  
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(Ex. Editor Rajya Sabha, TV) & by Team Dhyeya IAS  
(Broadcasted on YouTube & Dhyeya-TV)

# 7 IMPORTANT ISSUES

## 01 World Ocean Day 2020 : Innovation for Sustainable Ocean

### Why in News?

- ♦ World Oceans Day is celebrated every year on June 8 to create awareness about the benefits that mankind gets from the ocean. Each year a new theme is selected to observe this special day and in 2020 it is “Innovation for a sustainable ocean.”

### Background

- ♦ When we think of public health risks, we may not think of the ocean. Increasingly, however, the health of the ocean is intimately tied to our health. Some may be surprised to read that organisms discovered at extreme depths are used to speed up the detection of COVID-19, and probably even more to learn that, it is the environment that could give a solution to humankind.
- ♦ This is one of the multiple reasons why we should celebrate ‘World Oceans Day’ to remind everyone of the major role the oceans have in everyday life. They are the lungs of our planet, providing



**14 LIFE BELOW WATER**

**SUSTAINABLE DEVELOPMENT GOALS**

**NEREUS PROGRAM**

**SDG 14 TARGETS:**

**14.1** By 2025, prevent and significantly reduce marine pollution of all kinds

**14.2** By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts

**14.3** Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

**14.4:** By 2020, effectively regulate harvesting and and overfishing, illegal, unreported and unregulated fishing and destructive fishing practices

**14.5:** By 2020, conserve at least 10 per cent of coastal and marine areas

**14.6** By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing

**14.7** By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources

most of the oxygen we breathe. The purpose of the Day is to inform the public of the impact of human actions on the ocean, develop a worldwide movement of citizens for the ocean, and mobilize and unite the world's population on a project for the sustainable management of the world's oceans. They are a major source of food and medicine and a critical part of the biosphere. It is a day to celebrate together the beauty, the wealth and the promise of the ocean.

### Importance of Oceans

- ♦ Oceans serve as the world's largest source of protein, with more than 3 billion people depending on the oceans as their primary source of protein.
- ♦ Over three billion people depend on marine and coastal biodiversity for their livelihoods.
- ♦ Oceans absorb about 30% of carbon dioxide produced by humans, buffering the impacts of global warming.
- ♦ Covering 70 percent of the Earth's surface, the ocean transports

heat from the equator to the poles, regulating our climate and weather patterns.

- ♦ Many medicinal products come from the ocean, including ingredients that help fight cancer, arthritis, Alzheimer's disease, and heart disease.

### **Innovation for a Sustainable Ocean**

- ♦ As the challenges to the ocean continue to grow, so does the need for novel solutions and the people driving them. To that end, the theme of World Oceans Day 2020 is "Innovation for a Sustainable Ocean." Innovation—relating to the introduction of new methods, ideas, or products—is a dynamic term, and one that is fundamentally filled with hope.
- ♦ This year's theme is especially relevant in the lead-up to the United Nations (UN) Decade of Ocean Science for Sustainable Development, which will run from 2021 to 2030. The Decade will strengthen international cooperation to develop the scientific research and innovative technologies that can connect ocean science with the needs of society.

### **The United Nations Decade of Ocean Science for Sustainable Development (2021-2030)**

- ♦ On 5 December 2017, the UN declared that a Decade of Ocean Science for Sustainable Development would be held from 2021 to 2030. This Decade will provide a common framework to ensure that ocean science can

fully support countries to achieve the 2030 Agenda for Sustainable Development.

- ♦ The Decade will provide a 'once in a lifetime' opportunity to create a new foundation, across the science-policy interface, to strengthen the management of our oceans and coasts for the benefit of humanity.
- ♦ The Decade will strengthen the international cooperation needed to develop the scientific research and innovative technologies that can connect ocean science with the needs of society. It will also contribute to the UN processes protecting the ocean and its resources, such as the 'Aichi Biodiversity targets', 'the Small Island Developing States Accelerated Modalities of Action (SAMOA) Pathway', 'the UN Convention for the Law of the Sea' and 'the Sendai Framework for Disaster Risk Reduction'.
- ♦ The Decade will require the engagement of many different stakeholders to create new ideas, solutions, partnerships and applications, these include: scientists, governments, academics, policy makers, business, industry and civil society.
- ♦ The Intergovernmental Oceanographic Commission (IOC) of UNESCO has now been tasked by the UN General Assembly to work with all interested stakeholders to design a Decade of ocean science that will help us to deliver the ocean we need for the future we want.

- ♦ The Decade will focus on key priority areas, such as:

- ♦ Comprehensive digital atlas of the ocean.
- ♦ Comprehensive ocean observing system for all major basins.
- ♦ Quantitative and qualitative understanding of ocean ecosystems and their functioning as the basis for their management and adaptation.
- ♦ Ocean data and information portal.
- ♦ Integrated multi-hazard warning system.
- ♦ Ocean in earth-system observation, research and prediction, supported by social and human sciences and economic valuation.
- ♦ Capacity development and accelerated technology transfer, training and education, Ocean literacy.

### **Intergovernmental Oceanographic Commission of UNESCO (IOC)**

- ♦ The IOC of UNESCO is the UN body responsible for supporting global ocean science and services. A primary focus of the IOC is to enable its Member States to build the scientific and institutional capacity needed to achieve the United Nations Sustainable Development Goal 14 to conserve and sustainably manage ocean and marine resources by 2030.
- ♦ The IOC also provides a focus for other UN organizations and agencies with regard to ocean science, observations and data exchange.



## Plastic Polluting Our Oceans

- ◆ Plastic takes 100 of years to completely break down and decompose itself. So, once it makes its way into the oceans, seas, or any other water bodies, it tends to float on the surface forever. Exposed to the heat from sun the plastic tends to degenerate and make its way into the food chain. Marine animals consume the plastic waste, thinking it as food and die as plastic cannot be digested. Moreover, the worrisome part is that when the animals die and decompose, the plastic bag in their stomachs will again be released into the environment as it doesn't degrade.
- ◆ A staggering 8 million tonnes of plastic end up in the world's oceans every year. A lot of it comes from the world's rivers, which serve as direct conduits of trash from the world's cities to the marine environment.
- ◆ Plastic waste — whether in a river, an ocean, or on land — can persist in the environment for centuries.

## India and World Ocean Day

- ◆ Around 10 rivers alone carry more than 90% of the plastic waste that ends up in the oceans. The Indus and the Ganges, which flow through India, carry the second



and sixth highest amounts of plastic debris to the ocean.

- ◆ On World Environment Day, India pledged to eliminate all single-use plastics – carry bags, straws, and water bottles among others from the country by 2022. The country has also signed UN Environment Clean Seas campaign that was launched in February 2017 to fight marine plastic litter.
- ◆ Along with this, the country has taken many steps to fight plastic pollution – the environment ministry has banned plastics in all protected areas around the country, and declared them “plastic free zones”.

## Way Forward

- ◆ The coronavirus pandemic has been dominating headlines recently, but it's not the only pressing problem that affects the whole planet. The damage we are

doing to our oceans also threatens our existence.

- ◆ On World Oceans Day, we celebrate our seas and look at why we need to protect them, now more than ever. While there are countless threats to our seas, there are also many opportunities to find solutions. Our oceans give us life, but it's up to us to protect them.



### General Studies Paper- I & III

#### Topic:

- Important Geophysical phenomena such as Earthquakes, Tsunami, Volcanic activity, Cyclone etc., geographical features and their location-changes in critical geographical features (including Waterbodies and Ice caps) and in flora and fauna and the effects of such changes.

#### Topic:

- Conservation, environmental pollution and degradation, environmental impact assessment.

*Q. Discuss the importance of oceans and mention the steps being taken globally to conserve the oceans and also mention the contribution which individuals can make towards ocean conservation.*



02

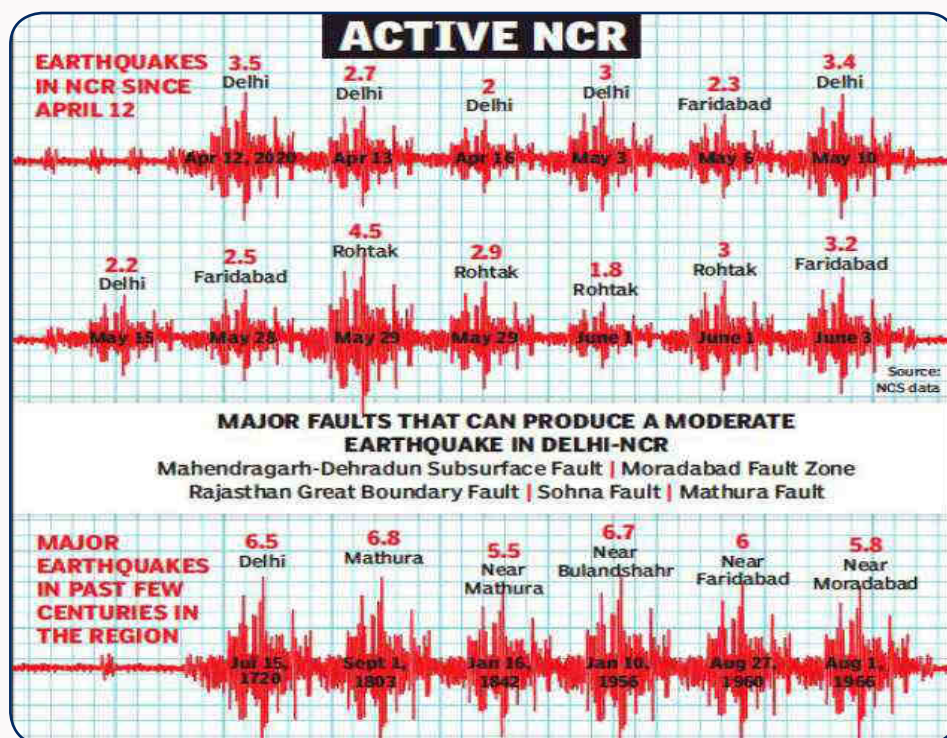
## Earthquakes in India : Fuelling Fears

### Why in News?

- From May 2020 till 10 June 2020, Delhi has recorded eleven minor earthquakes. Recent earthquakes have triggered discussions on the possibility of increased seismicity around Delhi, and fears of an impending big earthquake sometime soon.
- An earthquake of magnitude 5.5 on Richter Scale struck Gujarat's Rajkot district on 14th June 2020 evening.

### Background

- The Delhi and the National Capital Region has been rocked by a swarm of earthquakes in recent months. Coming at a time when the entire country is grappling with the COVID-19 pandemic, quakes, always seen as a bad omen, have made the common man hypertensive and asking the obvious questions.
- In the last 100 years, which is rather insignificant in the geological time scale considering earth's age is 4.5 billion years as per radiometric dating, India have been struck by at least 15 high-intensity earthquakes with the one on Republic Day in 2001 at Kutch, Gujarat killing 30,000 and damaging properties worth millions, most catastrophic.
- The Delhi-NCR's proximity to the Himalayas, more specifically morpho-geotectonic zones like



the Terai plain and the Shivalik range, has left the region vulnerable to earthquakes. The recent quakes may have only made their presence felt in terms of intensity but since Delhi is encased between two faults, viz Mahendragarh-Dehradun Subsurface Fault (MDSSF) and Great Boundary Fault (GBF); it will always remain prone to disaster. A fault allows blocks of earth to move relative to each other thereby releasing an enormous amount of strain that makes the crust shake.

of early advances in science and engineering related to earthquakes that are discussed here. These include the development of early codes and earthquake-resistant housing after the 1935 Quetta earthquake in Baluchistan, and strengthening techniques implemented after the 1941 Andaman Islands earthquake, discovered by the author in remote islands of India. Activities in the late 1950s to institutionalize earthquake engineering in the country are also discussed.

### Seismic Zoning Map of India

- The Indian subcontinent has suffered some of the greatest earthquakes in the world. The earthquakes of the late nineteenth and early twentieth centuries triggered a number
- Earthquake magnitude and earthquake intensity can help explain the severity of the hazard. "Earthquake magnitude is a measure of the size of the

earthquake, reflecting the elastic energy released by the earthquake. This is referred to by a certain real number on the Richter scale (e.g., magnitude 6.5 earthquake). On the other hand, earthquake intensity indicates the extent of shaking experienced at a given location due to a particular earthquake. This is referred to by a Roman numeral (e.g., VIII on MSK scale).

- ♦ A scientific way of looking at the earthquake vulnerability of different areas is by carrying out 'seismic micro zonation'. Seismic micro zonation is the process of subdividing a region into smaller areas that have varied potential for or susceptibility to hazardous earthquake effects. The National Centre for Seismology (NCS), working under the India Meteorological Department, records earthquakes and carries out studies on the micro zonation of India's cities. An early seismic zoning map divided India into five seismic zones.

## Seismic Zones in India and Intensity

| Seismic Zone | Intensity                  | Intensity on Modified Mercalli scale |
|--------------|----------------------------|--------------------------------------|
| Zone V       | Very severe intensity zone | IX and above                         |
| Zone IV      | Severe intensity zone      | VIII                                 |
| Zone III     | Moderate intensity zone    | VII                                  |
| Zone II      | Low intensity zone         | VI or less                           |

- ♦ According to this zoning map, Zone V has the highest level of seismic activity and falls in the 'very high damage risk' zone. Zone IV is the 'high damage risk' zone, Zone III the 'moderate damage risk' zone, and Zone II the 'low damage risk' zone. No part of India falls under Zone I.

## Vulnerable Cities

- ♦ India's cities are highly densely populated. It is thus likely that if an earthquake were to hit any city in the country, the destruction would be massive, and the process of rebuilding complex, lengthy and costly. It is in the interest

of India's cities—and the people who live in them, especially those in the higher intensity zones—to plan for seismic resilience.

- ♦ As per UN's Internal Strategy for Disaster Reduction, the term 'resilient' is defined as: "The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organising itself to increase this capacity for learning from past disasters for better future protection and to improve risk reduction measures.
- ♦ As of March 2016, 107 towns and cities across the country are seismically vulnerable. As per Census 2011, these cities had a combined population of around 30 million.[33] The next census, due in 2021, will show substantial population growth after a decade of greater urbanisation.

## Institutional Development Regarding Earthquakes

- Despite these early developments towards seismic safety, moderate earthquakes in India continue to cause thousands of deaths, indicating the poor seismic resilience of the built environment. The Bhuj earthquake of 2001 highlighted a striking disregard for structural design principles and quality of construction. This earthquake was the first instance of an earthquake causing collapses of modern multi-storey buildings in India, and it triggered unprecedented awareness amongst professionals, academics and the general public.
- The earthquake led to the further development of the National Information Centre of Earthquake Engineering (NICEE) and the establishment of a comprehensive 4-year National Programme on Earthquake Engineering Education (NPEE) that was carried out by the seven Indian Institutes of Technology and the Indian Institute of Science. Earthquake engineering is a highly context-specific discipline and there are many engineering problems where appropriate solutions need to be found locally.

## Making Cities Seismically Sustainable

- ♦ Depending on the seismic zone they fall in, cities must proactively encourage safety and prevention, and prepare for any eventuality of seismic activity. First, cities must develop criteria to identify seismically vulnerable buildings. Since a vast majority of such buildings would likely be privately owned, the assessment of structures should be done



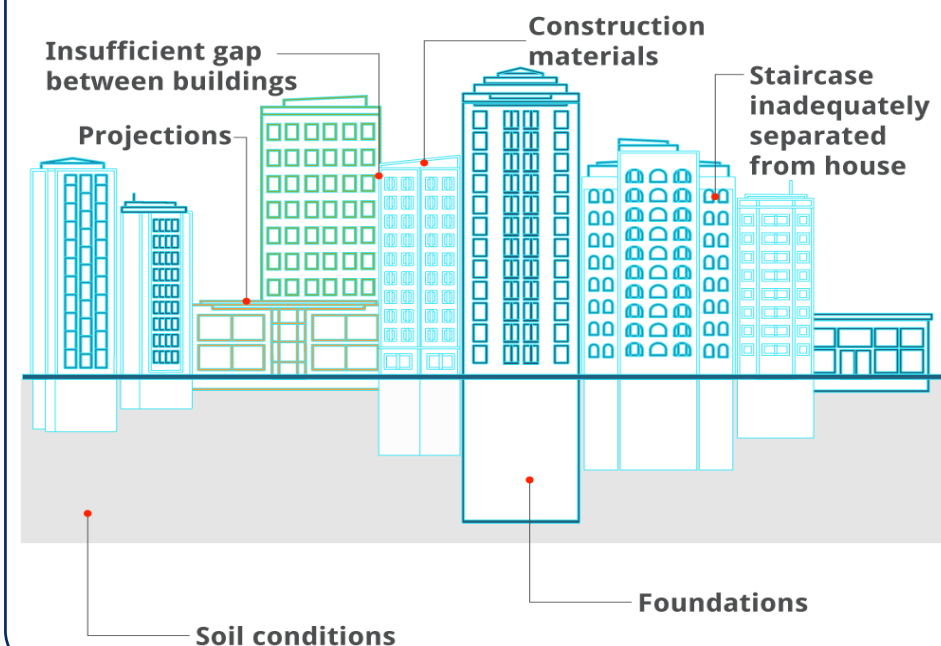
after notifying them and with their cooperation.

- ◆ Making new structures seismically sustainable is a far easier process than retrofitting old structures. For new construction, seismic risk assessment and sustainability must be enforced. A city's infrastructure has great significance in its resilience. The disruption caused by earthquake damage to infrastructure can have a significant cascading failure effect on municipal services, economic activity, and normal life. Improving the seismic sustainability of infrastructure will help avoid or lessen earthquake damage. However, just as with buildings, a balance must be achieved between seismic design and costs.

### Way Forward

- ◆ Clearly, a large part of India is prone to strong earthquake-induced shaking, and with highly vulnerable constructions, there is huge risk of death and destruction. Areas in seismic zones IV and V of the Indian zone map encompass some of the most populated regions of India, including Delhi, the world's second most populous city. In addition to being so highly populated, Delhi is projected to grow from 25 million to 36 million by 2030, thus even further increasing its vulnerability.

### Some factors that affect earthquake vulnerability in city construction



- ◆ Delhi-NCR region is at high damage risk zone. Under such a situation, the best solution is to become an earthquake resilient society, similar to that of Japan. To achieve this, we need long term as well as short term preparation both at government level as well as at an individual level.
- ◆ The geological/earth science agencies such as GSI, NCS are involved in carrying out various studies on monitoring earthquake events and identifying stress build up areas. There is this National Building Code of India by Bureau of Indian Standards that provides the standard for earthquake resistant parameters. The civil engineering practice in Japan is fully compliant to such

codes, where retrofitting of old and seismically vulnerable structures has aggressively been pursued and new structures are designed with seismic resilience. In this regard, strict laws, government's commitment as well as community's resolution is essential.



### General Studies Paper- I

#### Topic:

- Important Geophysical phenomena such as Earthquakes, Tsunami, Volcanic activity, Cyclone etc., geographical features and their location-changes in critical geographical features (including Waterbodies and Ice caps) and in flora and fauna and the effects of such changes.

**Q. In the light of recent events of earthquake in Indian cities, highlight the developments in India regarding the mitigation of earthquakes in post-Bhuj quake era.**

## 03 Anti-Racism Protests in USA : An Overview

### Why in News?

- ♦ The protests over the killing of George Floyd have spread across the United States (US) and world, with crowds of astonishing size. The size and length of the continued protests makes them more like a revolution than just a protest.
- ♦ George Floyd, a 46-year-old African American, died in Minneapolis on 25th May 2020 while being restrained by the police. Video footage showed an officer kneeling on Floyd's neck as he gasped for breath. Officers said he was suspected of using fake money and they stopped him and held him down by kneeling on his neck.

### Race and Racism

- ♦ At root, racism is "an ideology of racial domination in which the presumed biological or cultural superiority of one or more racial groups is used to justify or prescribe the inferior treatment or social position(s) of other racial groups. Through the process of racialization, perceived patterns of physical difference—such as skin color or eye shape—are used to differentiate groups of people, thereby constituting them as "races"; racialization becomes racism when it involves the hierarchical and socially consequential valuation of racial groups.
- ♦ Racism cannot be defined without first defining race. Among social scientists, "race" is generally understood as a social construct. Although biologically meaningless when applied to humans—physical differences such as skin colour have no natural association

with group differences in ability or behaviour—race nevertheless has tremendous significance in structuring social reality. Indeed, historical variation in the definition and use of the term provides a case in point.

### Evolution of the Race Terminology

- ♦ The term race was first used to describe peoples and societies in the way we now understand ethnicity or national identity. Later, in the seventeenth and eighteenth centuries, as Europeans encountered non-European civilizations, enlightenment scientists and philosophers gave race a biological meaning. They applied the term to plants, animals, and humans as a taxonomic sub-classification within a species. As such, race became understood as a biological, or natural, categorization system of the human species.
- ♦ As Western colonialism and slavery expanded, the concept was used to justify and prescribe exploitation, domination, and violence against peoples racialized as non-white. Today, race often maintains its "natural" connotation in folk understandings; yet, the scientific consensus is that race does not exist as a biological category among humans—genetic variation is far greater within than between "racial" groups, common phenotypic markers exist on a continuum, not as discrete categories, and the use and significance of these markers varies across time, place, and even within the same individual.
- ♦ In pre-colonial times, slaves were bought and sold freely across

continents, and it literally did not matter if they were black or white. Slavery became associated with race only after colonialism made its historic appearance. As racism grew, it not only brought in new aesthetic standards, including the admiration of the Caucasian (European) physical type, but also devalued the established learnings and findings of those who were subjugated. In the past, relationships between cultures were less mediated because the conquerors, when they stayed back, mingled with local traditions in a relatively uninhibited fashion.

### Parallels between 1968 and 2020

- ♦ The protests that erupted after the death of George Floyd have spread like wildfire across the big cities of the country, reminiscent of the protests that followed the assassination of Dr. Martin Luther King Jr. in April 1968. While the immediate trigger was Floyd's killing, what came out through the "riots" was the pent-up anger of thousands of Americans, who are fighting many odds at the same time.
- ♦ The year 1968 was one of the most tumultuous years in modern American history. Vietnam protests were already under way. On April 4, Dr. King was assassinated at a motel in Memphis, Tennessee. Two months later, presidential candidate Robert F. Kennedy was shot and killed in Los Angeles. The assassination of Dr. King had triggered violent protests across American cities, which are called "the Holy Week Uprising". Washington DC, Chicago, Baltimore, Kansas City all saw



violent unrest, mostly by black youth, in the intensity that had hardly been seen since the Civil War years.

- ◆ There are parallels between 1968 and 2020. Before Floyd's death, the U.S. was already reeling under massive economic and healthcare crises. The black community was disproportionately hit hard by the COVID-19 pandemic, which has claimed more than 100,000 American lives so far. The country is also witnessing the sharpest economic downturn since the Great Depression.
- ◆ America had seen race-related violence several times in the past. In 1992, Los Angeles saw a series of riots after four police officers who were on trial for the use of excessive force in the arrest and beating of Rodney King were acquitted. In 2014, the fatal shooting of Michael Brown, an 18-year-old black boy, triggered violent protests in Ferguson, Missouri. Those uprisings were also violent, but largely localised. What's happening now, like what happened in 1968, is "an American uprising". Beneath this uprising lies a divided country struggling to cope with the triple challenges of a deadly infection, joblessness and worsening race relations.

### Racism in India

- ◆ Stereotyping of North-eastern Indians is common. There have been persistent cases where

North-easterners living in other parts of India face discrimination because of their looks. Being called as "chinky", "momo", "chowmin" etc. are common and milder versions. In serious cases there have been reports of violence and rape. Hate crimes against North-eastern people are being treated as isolated cases by law enforcement and are being ignored by most Indians.

- ◆ Racism in the Indian context is intertwined with language, colour, caste, economics, politics, history and more. Take colour, for one, in the Indian mindspace. White is a reminder of our colonisers, black the colour of African slaves; white is the dominant colour of today's superpowers, black we associate with a poverty-stricken wilderness; white linked to rich, black to poor. In India it's the role of numbers. A white amongst blacks is discriminated and also a black amongst white is discriminated. Racism goes both ways.
- ◆ Horizontal discrimination can take a variety of forms: restrictive covenants, denial of access to public spaces, exclusion from economic transactions, and so on. These disparate ways of discrimination all involve, in some manner, a clash between the associative rights of private individuals (including their right not to associate with others, and to exclude others from associating with them) on the

one hand, and the rights of individuals and groups against non-discrimination and to full participation in the economic and social life of the community on the other. Case in point is when a muslim tenant finds it difficult to rent a house from a non-muslim, as reported from many urban cities.

### Way Forward

- ◆ Racism is a false constructs that attached superiority to one group and inferiority to another group. It is more of a politically motivated term, where scientists have categorically denied any impact of it on human abilities. Yet this has taken a deep seed in the mindset of common man and many people are discriminated due to this. Laws alone are not sufficient in this context. Educating people from early is needed and change of perception is much required.

### General Studies Paper- I

#### Topic:

- History of the world will include events from 18th century such as Industrial revolution, World wars, Redrawing of national boundaries, Colonization, Decolonization, Political philosophies like Communism, Capitalism, Socialism etc.- their forms and effect on the society.

**Q. Racism is a mis-construct which does not link human ability and physical features, yet as sociologically deep seated, it needs behavioural change at micro-level. Discuss.**

04

## Parliament of India during COVID-19 : Missing in Action

### Why in News?

- ◆ Parliaments in democracies around the world are meeting and questioning their governments on their responses to the COVID-19 pandemic.

### Introduction

- ◆ The Canadian Parliament had its first lockdown meeting towards the end of April, with roughly 280 of the 338 Members of Parliament attending through video conference and questioning the government for three hours.
- ◆ The British Parliament has adopted a hybrid model of in-person and video attendance. Several other countries have held sessions either with physical distancing (fewer MPs attend with agreement across parties) or video conferencing or a combination of the two. These include France, Italy, Argentina, Brazil, Australia and New Zealand. Many others are convening their committees through video-conferencing.
- ◆ The Parliament of the Maldives holds virtual proceedings with the help of Microsoft Teams. Its 87 lawmakers are using Microsoft 365, which includes Microsoft Teams video conferencing technology, instead of physically being present at the parliament house, known as the People's Majlis, in the capital, Male.
- ◆ The Inter Parliamentary Union has documented the processes used by various national parliaments to meet during the pandemic. India's Parliament, which prides itself as the apex representative body of the world's largest democracy, is a notable absentee from this list.

### Indian Parliament

- ◆ Parliament has a central role in our system of governance. First and foremost, it is the institution that checks and challenges the government of the day. While introducing the draft Constitution, B.R. Ambedkar explained why the drafting committee had preferred a parliamentary form over the presidential system of governance. The reasoning was that while the presidential system provides a higher level of stability, the parliamentary system is better at holding the government to account on a daily basis through questions, motions and debates. Over the decades, our Parliament has evolved procedures of accountability including hearings of committees. But, the fact that Parliament and its committees have not met for over two months indicates the absence of scrutiny of government actions.
- ◆ The question boils down to how our parliamentarians view themselves. If they think that they are sentinels of the people, they should find a way to perform their constitutional duties. Over the last three months, central and State governments have issued over 5,000 notifications to deal with the COVID-19 pandemic. The appropriateness of these circulars needs to be examined by Parliament and its committees. In ordinary times, Parliament would have its next session in the second half of July. In today's extraordinary circumstances, Parliament should meet sooner, perhaps within a couple of weeks.
- ◆ The Monsoon Session of Parliament, which normally begins

in the last week of June or in the first week of July, may still be held on time, Lok Sabha Speaker Om had announced, amid concerns that the coronavirus pandemic may delay its start.

### Indian Parliament during COVID-19

- ◆ The steps by the central government are being taken under the Disaster Management Act, 2005, which was not designed to handle epidemics. The reasoning is that the central government had no choice as there was no other law that provide it with powers to impose a lockdown across the country, which was needed to arrest the spread of the disease.
- ◆ This misses the point that Parliament, which was meeting till a day before the national lockdown was announced, could have passed an appropriate Act. This is what many other countries have done — an Act with suitable checks and an expiry date, which could be renewed by Parliament, if required.
- ◆ The Constitution requires all expenditure by the government to be approved by Parliament. The government has announced a series of measures to address the economic crisis sparked by the health crisis and the lockdown. These have not been subject to parliamentary scrutiny or approval.
- ◆ MPs have a duty to shape policy and guide the government in national interest. They represent the concerns of people by raising issues in Parliament. The country is facing serious challenges on many fronts as a consequence of the pandemic. Parliament is the forum where such issues should be discussed and a plan of action agreed upon.

## Finding Solution

- ◆ The meetings of the Houses are usually telecast live, and there is no issue of confidentiality. Committee meetings, on the other hand, may require secure remote working tools.
- ◆ Given that large global corporations as well as parliamentary committees of several other countries seem to have solved this problem, there is no reason that the Indian Parliament cannot adapt these solutions.
- ◆ All district headquarters are linked with fibre optic lines, so even if there is a problem of connecting the constituency office of MPs, they could use such government facilities.
- ◆ Our Constitution does not prohibit meetings that may require maintenance of physical distancing or remote meetings. It states that the President may summon Parliament "to meet at such time and place as he thinks fit".
- ◆ The Rules of Procedure of both Houses require the Secretary-General to issue summons to each member specifying the "date and place for a session" of the House. These enabling clauses can be used to hold hybrid meetings or remote meetings.
- ◆ The Rules require parliamentary committees to sit within the "precincts" of the House but the

Speaker may permit meetings to be held outside; indeed, subcommittees often go on study tours outside Delhi. Thus, there is no prior parliamentary action required to permit meetings through video-conferencing.

## Other Possible Solutions

- ◆ Full Online Session: A section of parliamentarians had earlier suggested holding virtual sessions, as was done in the UK, but it was completely ruled out over technical constraints and reservations expressed by several members.
- ◆ Mixed 'Online-Offline' Parliament Session
  - ◆ India has 543 Lok Sabha MPs and 245 members in the Rajya Sabha. At normal times, MPs, especially those of the Lok Sabha, sit packed in the benches, an arrangement that goes against the social-distancing requirements warranted by COVID-19, a highly infectious disease. However, the current seating areas of the two houses have been deemed inadequate to accommodate all MPs while complying with the social distancing guidelines.
  - ◆ One of the alternatives discussed was allowing as many MPs as possible in the conventional seating areas of the two houses, the Lok Sabha

and the Rajya Sabha, while accommodating some others in the gallery area overseeing it. The remaining MPs, it was suggested, could tune in online if they are comfortable with the medium.

- ◆ The total seating capacity even in the galleries is not enough to accommodate all the members.
- ◆ According to the assessment while the Central Hall and the Lok Sabha can accommodate a little over 100 MPs in compliance with social distancing protocols, the Rajya Sabha can accommodate about 60.

## Way Forward

- ◆ The Constitution requires all expenditure by the government to be approved by Parliament. The government has announced a series of measures to address the economic crisis sparked by the health crisis and the lockdown. These have not yet been subject to parliamentary scrutiny or approval.
- ◆ Members of Parliament represent the concerns of people by raising issues in Parliament. The country is facing serious challenges on many fronts as a consequence of the pandemic. 

### General Studies Paper- II

#### Topic:

- Parliament and State Legislatures - structure, functioning, conduct of business, powers & privileges and issues arising out of these.

*Q. India being one of the world's largest democracies cannot afford to shy away from its sessions in the name of a pandemic. If schools are conducting online classes, so the responsible parliamentarians can also conduct their sessions. Comment.*



05

## Opportunities for Indian Pharmaceutical Sector amidst COVID-19

### Why in News?

- ◆ As we are living in the shadow of the COVID-19 pandemic, India's pharmaceutical industry has a rare but brief opportunity to capture the global market as the chief supplier of affordable and high-quality medicines.
- ◆ Some companies have already impressed with their ability to address the sudden demand, with many of them ramping up production ten-fold within weeks and this in the middle of a lockdown that should have crippled their supply chains.
- ◆ Now it is for the industry to build on this unexpected bonanza before the world settles back to sourcing from China—whose giant plants have been turning out bulk drugs and intermediaries at a scale that leaves little room for India. But with many countries now looking at de-risking their supply lines by moving out partially or completely from China, Indian pharma companies have a golden opportunity to move in and present themselves as a viable option.

### Background

- ◆ The Indian pharmaceutical industry is the world's third largest drug producer by volume and the country's market manufactures 60 percent of vaccines globally. This constitutes 40 to 70 percent of
- ◆ According to a report on the Indian pharmaceutical industry, the source of APIs is a crucial part of the pharma industry's strategic plan to combat the COVID-19 pandemic. The majority of APIs for

### Major Hurdles



**Ban on public transportation** making it difficult for labourers to reach manufacturing plants

**Trucks carrying coal** for powering a manufacturing site of a pharma co not allowed to pass through

**Ancillary goods** for medicine production getting detained or are shut

**Vehicles of suppliers** of packaging materials for medicines getting detained

**Flight shut-down** has led to goods being stuck

**Printers that manufacture packaging** for medicines are shut

**District administrations** believed not to be co-operating, not issuing permits

**Transporters, courier services** 'not operating'

supply to satisfy the World Health Organization's (WHO) demand for Diphtheria, Tetanus and Pertussis (DPT) and Bacillus Calmette Guerin (BCG) vaccines and 90 percent of the global demand for the measles vaccine.

generic drug manufacturing across the globe are sourced from India, which also supplies approximately 30 percent of the generic APIs used in the US. However, Indian manufacturers rely heavily on APIs from China for the production of their medicine formulations, procuring around 70 percent from China, the top global producer and exporter of APIs by volume.

### Pharma Sector Sunrise

- ◆ Even before the COVID-19 outbreak, India was the largest producer of vaccines in the world. India's global export of essential medicines took a leap when Cipla — a noted Indian pharmaceutical firm — sold HIV medicines in sub-Saharan Africa at one-twenty-fifth the cost of medicines sold by other manufacturers.
- ◆ Building on this precedent, the Indian government had begun "Pharma Vision 2020" with the

goal of systematising processes, so that India could become the world leader in end-to-end production of pharmaceutical products. Its gains have manifested itself in the current pandemic, with countries such as the US requested India to export the anti-malarial medicine — Hydroxychloroquine — which is believed to have some success in combatting COVID-19. This had made many countries recognise the power and relevance of India as a leading medicines producer in the world.

- ◆ India's stature as the "pharmacy of the world" primarily stems from the range and volume of medicines it is able to produce as well as the low prices it is able to offer. Indian pharmaceutical firms are the largest among Asian countries in their capacity to produce generic medicines.
- ◆ India, however, lags a bit in developing new medicines. Also, Indian pharma companies face stiff competition from firms in China, Japan and Israel, and experience hostile behaviour

and intense negative lobbying from 'Big Pharma' groups which routinely accuse Indian companies of violating patent laws.

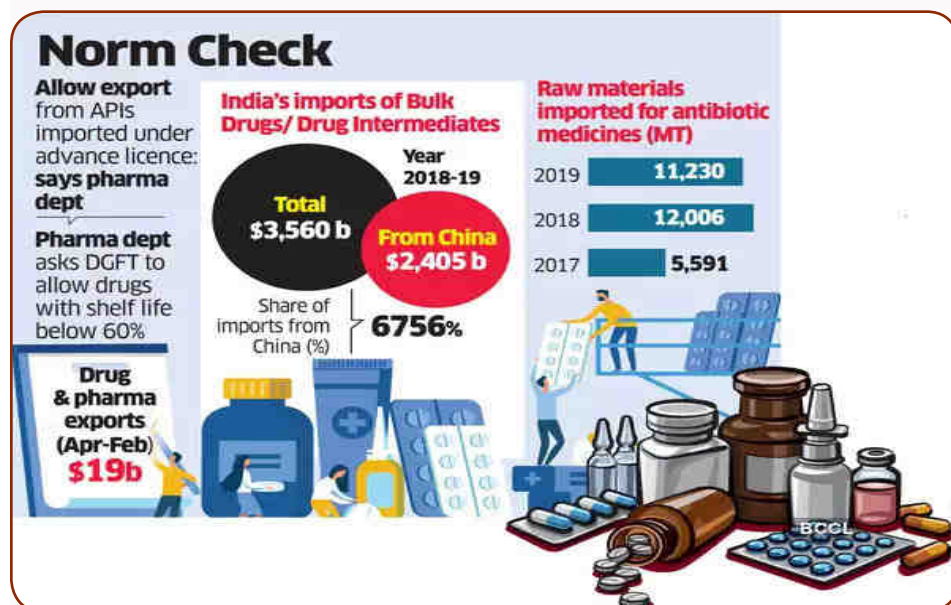
- ◆ India's existing advantage of large-scale pharmaceutical production allows it to significantly leverage its soft power by investing in the outward growth of the healthcare sectors of other nations by:
  - ◆ ramping up exports in pharmaceuticals;
  - ◆ becoming a preferred medical tourist destination for those seeking affordable treatment in quality secondary/tertiary health services; and
  - ◆ pursue medical diplomacy by providing medical training and technical expertise to many other developing nations whose healthcare systems are much worse than India.

### API Dependence on China

- ◆ Active Pharmaceutical Ingredients (APIs), or bulk drugs, are raw materials used in the manufacture

of medicines or formulations. China was one of the leading countries to produce and sell APIs to the rest of the world until recently. However, with the outbreak of COVID-19 and its origin traced to China, the production of APIs took a hit. This may affect the price and sale of medicines in countries to which Beijing exports the important ingredients.

- ◆ Moreover, the impact is set to be grave, as most of those materials are largely manufactured in the Hubei province. Its capital, Wuhan has been reported as the initial epicentre of the COVID-19 outbreak, and neighbouring areas of Zhejiang and Jiangsu are the other two major Chinese centres of medicinal raw material production.
- ◆ While the decrease in exports of APIs by China exposed the world's reliance on it, India's dependence has particularly been brought to light as it uses Chinese ingredients to produce one-fifth of the world's supply of medicines. Indian antibiotic manufacturers rely heavily — close to about 90% — on Chinese imports of raw materials. A number of Indian pharmaceutical companies are dependent on Chinese APIs for manufacturing medicines. Granules India and Aurobindo Pharma has among the highest exposure to imports of APIs from China, with the latter mainly for antiretroviral and antibiotic drugs.



- ◆ The global pharmaceutical industry is inter-twined in a complex manner and will gradually unravel, but shortages in production of APIs in China — happening already and likely to increase — would fast affect the production of formulations across the world.
- ◆ Already, inventory levels of APIs in India are decreasing. This along with reduced production of APIs in China will mean that prices of medicines in India could dramatically increase.

### Funding: Health Impact Fund

- ◆ The Health Impact Fund is a proposed pay-for-performance mechanism that would provide a market-based solution to problems concerning the development and distribution of medicines globally. It would incentivize the research and development of new pharmaceutical products that make substantial reductions in the global burden of disease.
- ◆ The Health Impact Fund is the creation of a team of researchers led by the Yale philosopher Thomas Pogge and the University of Calgary economist Aidan Hollis, and is promoted by the non-profit

organization Incentives for Global Health (IGH).

- ◆ The Health Impact Fund will be financed by states and charitable foundations. It would give pharmaceutical innovators the option of registering any new product for annual reward payments.
- ◆ When a medicine is registered with the Health Impact Fund, its price is delinked from its R&D costs. Even poor patients can afford such drugs because their price is limited to the costs of manufacture and distribution. One way of determining this price ceiling is through an organized competition among generic manufacturers.
- ◆ The reward payments received by pharmaceutical innovators depend solely on the annual health gains achieved by their registered medicines. The more such a new medicine improves or lengthens human lives, the more money goes to its innovator.

### Way Forward

- ◆ In the present situation, the Indian government should take important steps to remove the technical and financial barriers that will spur the pharmaceutical industry to ramp up API production,

reducing the dependency of the pharmaceutical industry as a whole on the heavily impacted Chinese market. The Indian government recently undertook applaudable steps by proposing an incentive package of 13.76 billion Indian Rupees (approximately \$181 million) for the promotion of domestic manufacturing of critical key starting materials, drug intermediates, APIs and medical devices.

- ◆ The Indian pharmaceutical industry maintains great advantages, including the availability of a large labour pool and advanced technologies that enable high regulatory standards of markets like the US and European countries to be met.



### General Studies Paper- II

#### Topic:

- Government policies and interventions for development in various sectors and issues arising out of their design and implementation.

#### Topic:

- Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.

*Q. Discuss the opportunities available for Indian pharmaceutical sector amidst Covid-19 crisis. Also discuss the challenges and what can be done to meet those challenges?*



06

## Multilateralism and the Myth of a New Cold War

### Why in News?

- ◆ The United States of America's (USA) pundits and politicians have largely concluded that a new Cold War with China – a period of intense hostility and competition falling just short of armed combat – has started.
- ◆ From the other side, Chinese Foreign Minister has said that, United States is pushing relations with China to “the brink of a new Cold War,”

### Background

- ◆ Chinese rhetoric of the heralding of a “New Cold War” era between the US and China has been on going from a long time. While most Western experts do not see any merit in the hyperbole of the beginning of a new era of superpower competition, Chinese media, its policymakers, and scholars have audaciously attempted to craft the narrative of the advent of the “New Cold War.” Such a portrayal comes across as a brazen attempt to present the

world with a fait accompli: China as an established superpower and an adversarial second pole in the global distribution of power.

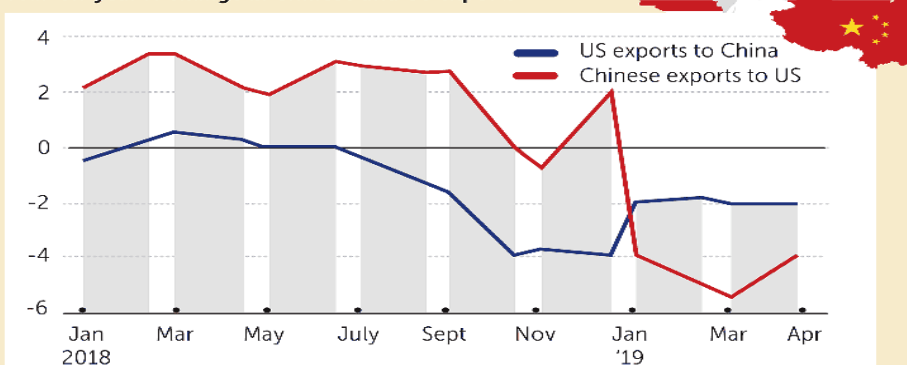
- ◆ This discourse has another immediate implication. While the current standoff between India and China may be resolved with diplomatic efforts, the future of India-China peace, in the Chinese view, depends on India's ability to pursue its China policy independently and not under the shadow of the growing U.S.-India alliance.
- ◆ A recent report in Global Times, a state-owned Chinese daily, while commenting on the on-going border standoff between China and India, advised India not to engage and get embroiled in the larger US-China confrontation. Baked in the advice was also a subtle warning that becoming a US front in the “New Cold War” could be detrimental for the Indian economy and its interests in the region.

### US – China: Clash Points

- ◆ The Chinese are committed to pushing US naval and air forces away from the Western Pacific (the South and East China seas), whereas the US military is determined to stay put. The Chinese commitment makes perfect sense from their point of view. They see the South China Sea the way American strategists saw the Caribbean in the 19th and early 20th centuries: the principal blue water extension of their continental land mass, control of which enables them to thrust their navy and maritime fleet out into the wider Pacific and the Indian Ocean, as well as soften up Taiwan. It is similar to the way dominance over the Caribbean enabled the US to strategically control the Western Hemisphere and thus affect the balance of forces in the Eastern Hemisphere in two world wars and a cold war. For the US, world power all began with the Caribbean, and for China, it all begins with the South China Sea.
- ◆ Regarding the trade talks themselves, what really riles both the Trumpsters and the Democrats (moderates and progressives alike) is the very way China does business: stealing intellectual property, acquiring sensitive technology through business buyouts, fusing public and private sectors so that their companies have an unfair advantage (at least by the mores of a global capitalistic trading system), currency manipulation, and so on.

### NO WINNER

Year-on-year % change in Chinese and US exports



Source: US International Trade Commission, International Trade Center, Chinese customs

BANGKOK POST GRAPHICS

Trade talks, however successful, will never be able to change those fundamentals. China can adjust its business model only at the margins. And because economic tensions with China will never significantly lessen, they will only inflame the military climate.

- ◆ There is also the ideological aspect of this new cold war. For several decades, China's breakneck development was seen positively in the US, and the relatively enlightened authoritarianism of Deng Xiaoping and his successors was easily tolerated, especially by the American business community. But under Xi Jinping, China has evolved from a soft to a hard authoritarianism.

### Other Influential Players

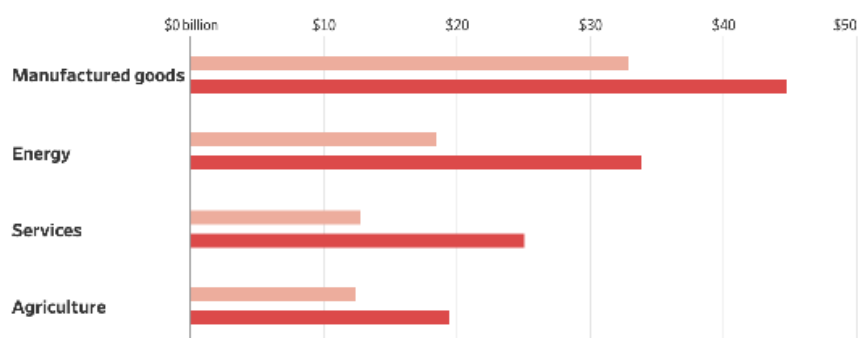
- ◆ The polarization between Washington and Beijing may be more dramatic than the actual polarity of the international system. In the Indo-Pacific aspiring great powers like Japan and India also vie for influence. Both countries have deepened their security cooperation with Southeast Asian countries in order to boost maritime defence capacity in the South China Sea. Tokyo has provided coast guard patrol vessels to the Philippines and Vietnam. Japan has also retained influence as the region's largest provider of development assistance for multiple decades. India for its part has enhanced interoperability with Association of Southeast Asian Nations (ASEAN) counterparts and regularized joint naval and coast

#### Planned Purchases

China agreed to increase its U.S. imports by about \$200 billion over two years.

#### Proposed increases in imports by category

■ 2020 ■ 2021



Source: U.S.-China Trade Agreement

- guard training drills such as the Singapore-India Maritime Bilateral Exercise (SIMBEX).
- ◆ Contrary to the Cold War, when the two hegemons divided the world into competing blocs, small states have a great deal of agency to affect today's balance of power and manage their external security environments. By and large, Southeast Asian countries are not neatly dividing into blocs along pro-China or pro-US lines. Instead, they are hedging and pursuing diversified foreign relations in order to reduce reliance on any one great power. They also strive to keep both Beijing and Washington engaged by playing the two competing powers off of one another.
- ◆ The clash between China and the US at the just concluded World Health Assembly in May marks the end of the multilateralism of the past 70 years. The donor-recipient relationship between developed and developing countries has ended with China's pledge of \$2-billion.
- ◆ The agenda-setting role of the G7 over United Nations institutions and global rules has also been effectively challenged by World Health Organisation ignoring the reform diktat of the US leading to its withdrawal, and characterisation of the G7 as "outdated". The US has also implicitly rejected the G20 and UN Security Council, for an expanded G7 "to discuss the future of China".
- ◆ The world has seen fewer military coups supported or directly orchestrated by the great powers. Rather, as suggested above, the US and China now compete for influence in the open, and loyalties are fluid. A couple examples may be useful. In Venezuela, a hotbed of anti-American leftism, the US has failed to bring about peaceful (or violent) political change to see its preferred leader, Juan Guaido, wrest political power from the regime of Nicolas Maduro.
- ◆ In Pakistan, a critical US partner during the Cold War as well as the global war on terror and US war in Afghanistan, Beijing has built

steady inroads — literally laying the country's physical infrastructure via the China-Pakistan Economic Corridor. In 2018, the two sides pledged to strengthen the “all-weather strategic cooperative partnership.” Yet there are concerns regarding potential backlash in response to over-exposure to Chinese debt and, and Prime Minister Imran Khan has struggled to balance relations with the west.

### India at Global Platform

- ◆ As chair of the Executive Board of the World Health Assembly (it is the decision-making body of the World Health Organization), India can set the global response in terms of multilateralism, not just medical issues.
- ◆ In September, the UN General Assembly will discuss the theme, “The Future We Want”; in 2021, India joins the UN Security Council (non-permanent seat) and chairs the BRICS Summit, and in 2022, hosts the G20, a rare alignment of stars for agenda-setting.
- ◆ At the online summit of the Non-Aligned Movement (NAM), in May, Prime Minister Modi called for new principles for the international system. His new globalisation model based on humanity, fairness and equality has wide support

in a more equal world as, for the first time since 1950, everyone is experiencing the same (virus) threat.

- ◆ For India, the strategic issue is neither adjustment to China's power nor deference to US leadership. China has come out with alternative governance mechanisms to the US-dominated International Monetary Fund, World Bank and World Trade Organization with its all-encompassing Belt and Road Initiative. The US, European Union and Japan are re-evaluating globalisation as it pertains to China and the US is unabashedly “America First”. The world is questioning both US and China's exceptionalism.
- ◆ The global vacuum, shift in relative power and its own potential, provides India the capacity to articulate a benign multilateralism as a NAM-Plus that resonates with large parts of the world and brings both BRICS and the G7 into the tent. This new multilateralism should rely on outcomes, not rules, ‘security’ downplayed for ‘comparable levels of wellbeing’ and a new P-5 that is not based on the G7.

### Way Forward

- ◆ The “New Cold War,” if it ever becomes a reality, would be

completely different from the Cold War of the twentieth century. The US no longer enjoys the same hegemonic status as it did decades ago. Its position as the leader of the liberal international order has long been eroded.

- ◆ China's backdoor machinations of claiming superpower status are predicated on its ability to be accepted first as a regional hegemon. Its lingering disputes with most of its neighbours would make it difficult for regional states to accept or accord such a status to China.
- ◆ India by playing on its own strengths would deny China the strategic space it is trying to grab by casting the present crisis as a part of the “New Cold War” between the US and China. Instead, it should solely be seen and handled purely as a bilateral dispute between the two neighbours.



### General Studies Paper- II

#### Topic:

- Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests.

**Q. The new cold war is not a text book definition of a bi-polar world and two fighting blocks. Discuss the phrase “new cold war”, and what it means for India and how can India shape its response towards it?**



**07**

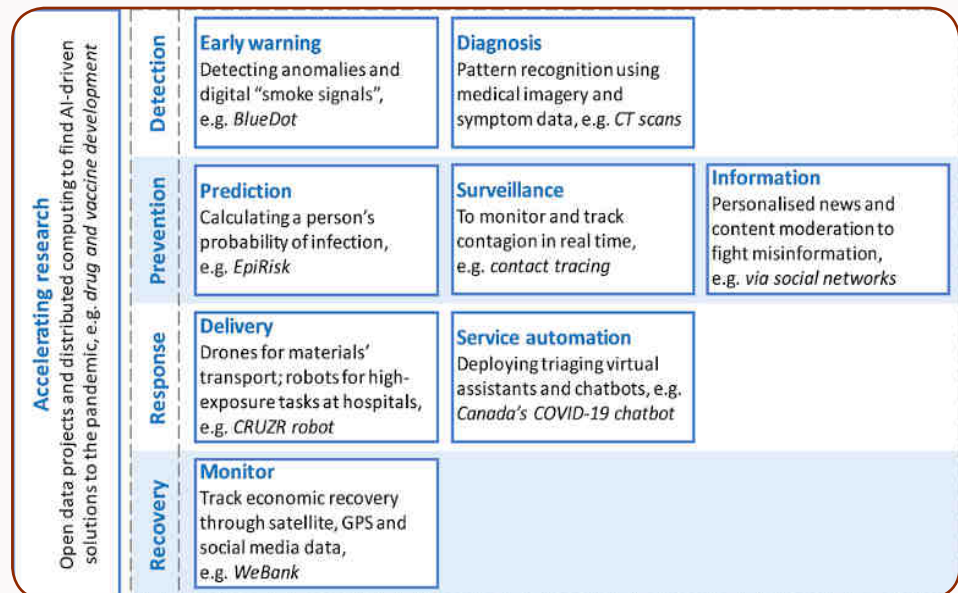
## Role of Artificial Intelligence in the Pandemic

### Why in News?

- As the world grapples with COVID-19, every ounce of technological innovation and ingenuity harnessed to fight this pandemic brings us one step closer to overcoming it. Artificial intelligence (AI) and machine learning are playing a key role in better understanding and addressing the COVID-19 crisis.

### Background

- COVID-19 disease, caused by the SARS-CoV-2 virus, was identified in December 2019 in China and declared a global pandemic by the World Health Organisation (WHO) on 11 March 2020.
- Since the outbreak of the pandemic, there has been a scramble to use and explore AI, and other data analytic tools, for these purposes.
- AI is a potentially powerful tool in the fight against the COVID-19 pandemic. AI can, for present purposes, be defined as Machine Learning (ML), Natural Language Processing (NLP), and Computer Vision applications to teach computers to use big data-based models for pattern recognition, explanation, and prediction. These functions can be useful to recognize (diagnose), predict, and explain (treat) COVID-19 infections, and help manage socio-economic impacts.



### Scope of AI

#### Early Warnings and Alerts

- The case of the Canadian-based AI model, 'BlueDot', has already become legendary. It illustrates that a relatively low-cost AI tool can out-predict humans in spotting infectious disease outbreaks. According to accounts, 'BlueDot' predicted the outbreak of the infection at the end of 2019, issuing a warning to its clients on 31 December 2019, before the World Health Organization (WHO) did on 9 January 2020.
- While 'BlueDot' sounded an alarm on 31 December 2019, another AI-based model, 'HealthMap', at Boston Children's Hospital in the USA, sounded an alarm even earlier, on 30 December 2019. Moreover, only 30 minutes after this, a scientist at the Program for Monitoring Emerging

Diseases issued an alert. While the AI-based model was faster by only 30 minutes, it, however, attached a very low level of significance to the outbreak. In essence, it required human interpretation and providing context to recognize the threat.

#### Tracking and Prediction

- AI can in principle be used to track and to predict how the COVID-19 disease will spread over time and space. AI requires data on COVID-19 to train. An example of how this can be done is the case of the 2015 Zika-virus, whose spread was ex post predicted using a dynamic neural network.
- A number of promising initiatives have been started to gather and share data -both existing data, new data, and to train new AI models. These include the WHO's Global Research on Coronavirus Disease Database,

which also provides links to other similar initiatives. One of these is the open access data of the GISAID Initiative (formerly the Global Initiative on Sharing All Influenza Data). Amongst other initiatives, perhaps the most ambitious is the joint initiative between Semantic Scholar, the Allen Institute for Artificial Intelligence, Microsoft, Facebook, and others, to make openly available the COVID-19 Open Research Dataset (CORD-19) which contains around 44,000 scholarly articles for data mining.

- ♦ Due to lack of data, noisy social media and outlier data, big data hubris, and algorithmic dynamics, AI forecasts of the spread of COVID-19 are not yet very accurate or reliable. Hence, so far, most models used for tracking and forecasting do not use AI methods. Instead, most forecasters prefer established epidemiological models, so-called SIR model.

#### ♦ **Diagnosis and Prognosis**

- ♦ In addition to potentially tracking and predicting the spread of COVID-19, AI can also be used in the diagnosis and prognosis of the disease. In fact, this is perhaps where most of the first rush of AI initiatives focused on. Fast and accurate diagnosis of COVID-19 can save lives, limit the spread of the disease, and generate data on which to train AI models. There is growing effort to train AI models to diagnose COVID-19 using chest radiography images.

- ♦ AI can be as accurate as humans, can save radiologists' time, and perform a diagnosis faster and cheaper than with standard tests for COVID-19. Both X-rays and computed tomography (CT) scans can be used.
- ♦ Given that not all people diagnosed with COVID-19 will need intensive care, the ability to be able to forecast who will be affected more severely can help in targeting assistance and planning medical resource allocation and utilization.

#### ♦ **Treatments and Vaccines**

- ♦ Another area where AI can potentially make a contribution in the fight against COVID-19 is in identifying possible treatments and vaccines. Even long before the COVID-19 outbreak, AI was lauded for its potential to contribute to new drug discovery.
- ♦ In the case of COVID-19, a number of research labs and data centers have already indicated that they are recruiting AI to search for treatments for and a vaccine against COVID-19. The hope is that AI can accelerate both the processes of discovering new drugs as well as for repurposing existing drugs.

#### ♦ **Social Control**

- ♦ AI has been, and can further be used, to manage the pandemic by scanning public spaces for people potentially infected, and by enforcing social distancing and lockdown measures.

Chinese firm Baidu is one of the producers of such infrared cameras that use computer vision to scan crowds. It is reported that these cameras can scan 200 persons per minute and will recognize those whose body temperature exceeds 37.3 degrees.

- ♦ This usage is not limited to China. An AI-based computer vision camera system scanning public areas has been used to monitor whether people in the UK city of Oxford keep to the social distancing measures of the government. A USA computer vision-based startup is already offering "social distancing detection" software, which uses camera images to detect when social distancing norms are breached, after which it will send out a warning. In more extreme cases, the Israeli government has approved cyber-monitoring by its security services to identify and quarantine people that may be infected, and Russia is rolling out a combination of an app and QR system to track infected people and control movement.

### **AI Deployment in Indian States against COVID-19**

#### ♦ **Kerala**

- ♦ Kerala's use of Srishti Robotics' 'Nightingale-19 Robot' is a good example. With lack of protective gear placing the lives of healthcare professionals in danger, the state has been leveraging robotics solutions for them to treat patients remotely.

Not only can the bot deliver food and medicines in bulk, but it also allows doctors and other healthcare practitioners to use video interactive technologies to interact with patients. It is currently being used in hospitals in Kannur and Thalassery.

♦ **Uttar Pradesh**

- ♦ Much like Srishti Robotics' 'Nightingale-19 Robot', Addverb Technologies has been assisting government quarantine centres in Noida by enabling contactless operations like food and medicine delivery. The robotics startup is also doubling down on using its solutions to sanitise hospitals and schools.
- ♦ Another startup, Staqu, has launched AI-powered crowd surveillance technologies to curb the spread of the outbreak. Using its proprietary video analytics platform 'JARVIS', it is currently being used across the state to help authorities enforce social distancing rules and identify protocol violators.

♦ **Tamil Nadu**

- ♦ The Tamil Nadu e-Governance Agency (TNeGA) has been at the forefront when it comes to integrating technology into COVID-19 strategies. The team has delivered software for various applications, including inventory management in hospitals, enforcing quarantine orders, and operating call centres, among others. Additionally, it has launched an 'Aarogya Setu IVRS system'

for people who do not use smartphones, especially senior citizens.

♦ **Andhra Pradesh**

- ♦ Another city that has been leveraging the power of drone technology is Hyderabad. The government has collaborated with tech firm Cyient to enable the police force to use drone-based surveillance to monitor sensitive colonies. In addition to that, it also enables them to deploy resources quickly and make timely public announcements.

♦ **Maharashtra**

- ♦ To scan passengers for COVID-19 symptoms and to ensure contactless entry, body-screening facility "FebriEye thermal cameras" have been set up at Chhatrapati Shivaji Maharaj Terminus and Lokmanya Tilak Terminus in Mumbai, Maharashtra.
- ♦ FebriEye is an AI based thermal screening system for real-time and automated, non-intrusive monitoring to ensure that a person entering does not have a high fever. FebriEye use heat sensors that can record heat generated by the body of a person or an object to create a 2D image with different temperature levels. When passengers pass before the cameras, anyone with a temperature above the set

range will be shown in a different colour pattern than the rest on the computer screen connected to the cameras.

**Way Forward**

- ♦ AI is being used as a tool to support the fight against the viral pandemic that has affected the entire world since the beginning of 2020. The press and the scientific community are echoing the high hopes that data science and AI can be used to confront the coronavirus and "fill in the blanks" still left by science.
- ♦ Healthcare organizations are in an urgent need for decision-making technologies to handle this virus and help them in getting proper suggestions in real-time to avoid its spread. AI works in a proficient way to mimic like human intelligence. It may also play a vital role in understanding and suggesting the development of a vaccine for COVID-19.



**General Studies Paper- III**

**Topic:**

- Science and Technology-developments and their applications and effects in everyday life.

**Topic:**

- Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

*Q. Discuss the role of AI in the fight against COVID-19 pandemic also in understanding and suggesting the development of a vaccine for COVID-19.*



# 7

## IMPORTANT BRAIN BOOSTERS

01

### Social Bubbles

#### 1. Why in News?

- A new study published in Nature Human Behaviour suggests that one of the ways of effective social distancing strategies to keep the COVID-19 curve flat include the idea of social bubbles.
- The idea of 'social bubbles' is based on New Zealand's model of household 'bubbles' - an exclusive social group that is allowed to meet with each other amid the pandemic.



#### 5. Significance

- Social bubbles can also be applied by employers to create departmental or work unit bubbles of employees. For instance, for hospitals and essential workers, the risk of transmission can be minimised by introducing shifts with a similar composition of employees. This could mean clubbing together employees based on their residential proximity.
- The authors of the study maintain that these "micro-communities" are difficult for a virus to penetrate and if in case the infection is contracted by one contact, it would be difficult for the virus to spread much further.

#### 2. Limiting Virus Spread

- Researchers have revealed that social bubbles or small groups of close contacts made up of friends and family may be the best way to keep COVID-19 contained when a lockdown is lifted.
- According to the study, lifting the lockdown in favour of strategic distancing, could lead to improved compliance with official recommendations and 'keep the curve' flat, in terms of COVID-19 infections.

#### 3. Findings of the Study

- The study introduces three strategies, which include contact with similar people, strengthening contact in communities and repeatedly interacting with the same people in bubbles.
  - These strategies rely less on confinement and allow strategic social contact while still flattening the curve.
- Each strategy offers the prospect of increased social contact, in a clearly defined way.
- With regards to social bubbles, the study says that to create them individuals must decide with whom they want to regularly interact and overtime, they should restrict interactions to just these people. "This reduces the number of contact partners rather than the number of interactions.
- Maintaining similarity across contacts, such as only interacting with people who live within the same neighbourhood, and decreasing ties as occasional acquaintances were found to be highly effective when compared to reducing contact at random.
- Based on the findings, the authors suggest that reducing high-impact contact, rather than reducing or removing it overall, can mitigate adverse social, behavioural and economic impacts of lockdown approaches while keeping risks low.

#### 4. New Zealand Model

- As per New Zealand's model, a bubble is referred to as an individual's household or the people that one lives with.
- Under Alert level 3, people are allowed to extend their bubbles slightly to include caregivers or children who might be in shared care.
- It also applies to people who are living alone or a couple who wants the company of another one or two people. These people don't need to live in the same household but must be local.
- In case a member of the bubble develops symptoms, the entire bubble quarantines itself, preventing further spread of the infection.

## 02 Silent Hypoxia

### 1. Why in News?

- Silent hypoxia has emerged as the new villain as the COVID-19 pandemic enters a new phase in the state.
- Several medical practitioners have reported a condition called 'silent' or 'happy' hypoxia, in which patients have extremely low blood oxygen levels, yet do not show signs of breathlessness.



### 2. What is Hypoxia?

- Hypoxia is a condition wherein there is not enough oxygen available to the blood and body tissues. Hypoxia can either be generalised, affecting the whole body, or local, affecting a region of the body.
- According to the experts, normal arterial oxygen is approximately 75 to 100 millimetres of mercury (mm Hg), and normal pulse oximeter readings usually range from 95 to 100 per cent. Values under 90 per cent are considered low.
- When levels fall below 90 per cent, patients could begin experiencing lethargy, confusion, or mental disruptions because of insufficient quantities of oxygen reaching the brain.
  - Levels below 80 per cent can result in damage to vital organs.

### 3. What is Silent Hypoxia?

- 'Covid pneumonia' - a serious medical condition found in severe COVID-19 patients — is preceded by 'silent hypoxia', a form of oxygen deprivation that is harder to detect than regular hypoxia.
- In 'silent' or 'happy' hypoxia, patients appear to be less in distress. Many COVID-19 patients, despite having oxygen levels below 80 per cent, look fairly at ease and alert, according to multiple reports. This phenomenon has puzzled several medical practitioners.
- In emergency wards, doctors have reported patients having oxygen levels below 80 or 70 per cent, in some cases even lower than 50 per cent. Those with such low levels of oxygen would ordinarily appear extremely ill, but not in silent hypoxia cases; patients have been reported sitting up in bed talking or operating mobile phones.
- In many cases, COVID-19 patients with silent hypoxia did not exhibit symptoms such as shortness of breath or coughing until their oxygen fell to acutely low levels, at which point there was a risk of acute respiratory distress (ARDS) and organ failure.

### 5. COVID-19 and Silent Hypoxia

- Coronavirus-induced respiratory system damage occurs even in persons who are not obviously symptomatic or asymptomatic but infected with SARS-CoV-2 coronavirus.
- In healthy persons, lipids and proteins protect the alveoli – tiny air sacs in the lungs. These lipoproteins protect the alveoli from collapsing and failing to inflate during inhalation.
- In lungs battling COVID-19, viral induced damage removes the lipid and protein protection of alveoli. Alveolar cells collapse and no longer adequately oxygenate the blood of the patient.
- Patients with this complication rapidly further damage lung tissue by overstretching with inspiration or ventilation. This risk requires an intervention to prevent progression in Silent Hypoxia.

### 4. Possible Reasons

- The reason why people are left feeling breathless is not because of the fall in oxygen levels itself, but due to the rise in carbon dioxide levels that occur at the same time, when lungs are not able to expel this gas efficiently. This response does not appear to be kicking in in some COVID-19 patients
- This happens because in patients with 'covid pneumonia', the virus causes air sacs to fall, leading to a reduction in levels of oxygen. However, the lungs initially do not become stiff or heavy with fluid, and remain "compliant" — being able to expel carbon dioxide and avoiding its buildup. Thus, patients do not feel short of breath.

03

## Disqualification Shadow on 7 Nagaland MLAs

### 1. Why in News?

- The Kohima Bench of the Gauhati High Court has directed Nagaland Assembly Speaker Sharingain Longkumer to conclude the disqualification proceedings against seven lawmakers of the Opposition Naga People's Front (NPF) and pass appropriate orders within six weeks from June 2.



### 6. The (ab)use of the Law

- The removal of the split provision prompted political parties to engineer wholesale defections (to merge) instead of smaller 'retail' ones. Legislators started resigning from the membership of the House in order to escape disqualification from ministerial berths.
- The ceiling on the size of the Council of Ministers meant an increase in the number of positions of parliamentary secretaries in states. The Speakers started taking an active interest in political matters, helping build and break governments. The anti-defection law does not specify a timeframe for Speakers to decide on defection proceedings. When the politics demanded, Speakers were either quick to pass judgment on defection proceedings or delayed acting on them for years on end.
- The long drawn-out events in the Karnataka Vidhan Sabha have shown that even after three decades, the anti-defection law has not been able to stop political defections.

### 2. Action by MLAs

- On April 24, 2019, the NPF filed disqualification petitions against its seven suspended MLAs for "wilfully" defying its collective decision to support the Congress candidate in the 2019 Lok Sabha polls.
- On March 25, 2019, MLAs N. Thongwang Konyak, Eshak Konyak, E.E. Pangteang, B.S. Nganglang, Toyang Chang, Kejong Chang and C.L. John rebelled and issued a written declaration to support Tokheho Yephthomi, rival candidate of the Nationalist Democratic Progressive Party (NDPP), who eventually won.
- The NDPP rules Nagaland in alliance with the BJP.

### 3. Anti-defection Law

- In 1985, Rajiv Gandhi government inserted the 10th schedule in the Constitution that deals with the issue of disqualification of a member for changing his political party or for defying party's direction by voting against or abstaining from voting by defying a party whip.
- It lays down the rules and procedures for disqualification of a member from the house by its presiding officer. The presiding officer can act against such members on the complaints received by any other member of the house.
- A member of either house of the Parliament or a legislative assembly attracts the provisions of disqualification if he voluntarily resigns from the party or when he defies the party's directions and either votes against the party's directions or abstains from voting in defiance of a party whip.
- The Supreme Court has expanded the definition of 'voluntary resignation' in its decisions, saying that if a member indulges in anti-party activities without resigning from the party then it can be inferred that he has voluntarily given up the membership of the party.

### 4. Split and Merger under Anti-defection Law

- According to the Tenth Schedule, it requires at least two-third members of a legislature party to form a new political group, or 'merge' with another political party without getting disqualified under the anti-defection law.
- However, this provision was done away with by the 91st amendment to the Constitution in 2003. The amendment, which came into force in January 2004, does not recognise a 'split' in a legislature party.
- Instead, it recognises a 'merger' that requires at least two-third members of a legislature party to join another political formation or form a new one without inviting the wrath of the anti-defection law.

### 5. Speaker's Decision and Judicial Scrutiny

- The 10th schedule of the Constitution bars judicial scrutiny of a speaker's decision to disqualify a member on account of defection or anti-party activities.
  - However, the top court struck down this provision in a judgement in 1992.
- The Supreme Court held that a presiding officer's decision was open to judicial scrutiny by high courts and Supreme Court.



## 04 Oil Spill in Russia's Arctic Region

### 1. Why in News?

- Russia declared a state of emergency on June 3 after a massive oil spill in the Arctic region.



### 2. About Incident

- The thermoelectric power plant at Norilsk is built on permafrost, which has weakened over the years owing to climate change.
- This caused the pillars that supported the plant's fuel tank to sink, leading to a loss of containment on May 29.
- Reports said that around 20,000 tonnes of diesel oil was released into the Ambarnaya river, which has since drifted 12 km on its surface.
  - The Ambarnaya river, into which the oil has been discharged, is part of a network that flows into the environmentally sensitive Arctic Ocean.
- Russian president Vladimir Putin declared a state of emergency in the region around the Ambarnaya River, in eastern Russia, due north of Mongolia.
- Norilsk Nickel, the Russian mining giant that owns the plant, said it had reported the leak in a 'timely and proper' way and that the pillars had held the tank in its place 'for 30 years without difficulty'.

### 5. Previous Disasters

- Norilsk Nickel, which is the world's leading nickel and palladium producer, has also been blamed for another leak in 2016, when pollutants from its plant leaked into another river in the region.
- In comparison, the Exxon Valdez oil spill in Alaska's Prince William Sound spilled 11 million gallons, or about 346,000 tons (314,000 metric tons) of oil in 1989, while the Deepwater Horizon oil spill in the Gulf of Mexico spilled 200 million gallons, or about 6.3 million tons (5.7 million metric tons) of oil in 2010.
- The worst oil spill in history, the Gulf War oil spill spewed an estimated 8 million barrels of oil into the Persian Gulf after Iraqi forces opened valves of oil wells and pipelines as they retreated from Kuwait in 1991. The oil slick reached a maximum size of 101 miles by 42 miles and was five inches thick.

### 3. Clean-Up

- The cost of clean-up operations is estimated to be between 6 and 10 billion rubles (over \$76 million) and has compared the incident to Alaska's 1989 Exxon Valdez disaster.
  - Its estimate does not include atmospheric damage due to greenhouse gases and soil pollution.
- Clean-up of oil in cold environments is particularly challenging due to low biodegradation rates, evidenced by the long-lasting effects of the infamous Exxon Valdez oil spill in Alaska.
- Arctic is warming more than twice as fast as the global average, especially in Siberia where the spill occurred and where the landscape is shaped by permafrost that's melting.

### 4. Extent of the Damage

- Environmentalists have said the river would be difficult to clean, given its shallow waters and remote location, as well as the magnitude of the spill.
- The government expects environmental restoration in the region to take 10 years.
- World Wildlife Fund described this as the second-largest known oil leak in modern Russia's history in terms of volume.

## 05 Sixth Mass Extinction

### 1. Why in News?

- According to new research published in the journal Proceedings of the National Academy of Sciences of the United States of America (PNAS), the on-going sixth mass extinction may be one of the most serious environmental threats to the persistence of civilisation.

### 2. Introduction

- Researchers have described the sixth mass extinction, or the Anthropocene extinction, as the "most serious environmental problem", since the loss of species here will be permanent.
- The research claims that this extinction is human-caused and is more immediate than climate destruction.
  - ☛ Over 500 species will go extinct in 20 years because of human beings, a process that would have normally taken 10,000 years.

### 3. Mass Extinction of Species

- A mass extinction is usually defined as a loss of about three quarters of all species in existence across the entire Earth over a "short" geological period of time.
  - ☛ Given the vast amount of time since life first evolved on the planet, "short" is defined as anything less than 2.8 million years.
- Since at least the Cambrian period that began around 540 million years ago when the diversity of life first exploded into a vast array of forms, only five extinction events have definitively met these mass-extinction criteria.



### 4. The Big Five

- Paleontologists recognize five big mass extinction events in the fossil record.
  - ☛ At the end of the Ordovician, some 443 million years ago, an estimated 86% of all marine species disappeared.
  - ☛ At the end of the Devonian, some 360 million years ago, 75% of all species went extinct.
  - ☛ At the end of the Permian, some 250 million years ago, the worst extinction event so far happened, with an extinction rate of 96%.
  - ☛ At the end of the Triassic, some 201 million years ago, 80% of all species disappeared from the fossil record.
  - ☛ The most famous mass extinction happened at the end of the Cretaceous, some 65 million years ago, when 76% of all species went extinct, including the dinosaurs.
- These extinctions were caused by "catastrophic alterations" to the environment, such as massive volcanic eruptions, depletion of oceanic oxygen or collision with an asteroid.
  - ☛ After each of these extinctions, it took millions of years to regain species comparable to those that existed before the event.

### 5. Sixth or Not?

- The Earth is currently experiencing an extinction crisis largely due to the exploitation of the planet by people. But whether this constitutes a sixth mass extinction depends on whether today's extinction rate is greater than the "normal" or "background" rate that occurs between mass extinctions.
- This background rate indicates how fast species would be expected to disappear in absence of human endeavour, and it's mostly measured using the fossil record to count how many species died out between mass extinction events.
- In contrast to the the Big Five, today's species losses are driven by a mix of direct and indirect human activities, such as the destruction and fragmentation of habitats, direct exploitation like fishing and hunting, chemical pollution, invasive species, and human-caused global warming.
- Even considering a conservative background rate of two extinctions per million species-years, the number of species that have gone extinct in the last century would have otherwise taken between 800 and 10,000 years to disappear if they were merely succumbing to the expected extinctions that happen at random. This alone supports the notion that the Earth is at least experiencing many more extinctions than expected from the background rate.

## 06 Direct Seeding of Rice

### 1. Why in News?

- To cope up with the labour scarcity amid the COVID-19 pandemic, the Punjab government has stepped up its efforts to encourage farmers to switch over to direct seeding of rice (DSR) instead of the traditional transplantation of paddy this year.



### 2. DSR Technique

- Dry and wet-seeding, in which seeds are sown directly in the main field instead of transplanting rice seedlings, are commonly referred to as direct seeding.
- **Dry DSR**
  - In Dry-DSR, rice is established using several different methods, including (i) broadcasting of dry seeds on unpuddled soil after either zero tillage (ZT) or conversion tillage (CT) (ii) dibbled method in a well-prepared field and (iii) drilling of seeds in rows after CT, minimum tillage (MT) using a power tiller-operated seeder.
- **Wet DSR**
  - Wet-DSR involves sowing of pregerminated seeds on or into puddled soil. When pregerminated seeds are sown on the surface of puddled soil, the seed environment is mostly aerobic and this is known as aerobic Wet-DSR.
  - When pregerminated seeds are sown/drilled into puddled soil, the seed environment is mostly anaerobic and this is called as anaerobic Wet-DSR.

### 3. Advantages of Direct Seeding

- The technology is expected to save irrigation water, labour and energy (power).
- The technique would be instrumental in saving about 30 per cent of water besides cutting the cost of paddy cultivation by nearly Rs 6,000 per acre.
- The technology has a wider adaptability as it is suitable for medium to heavy textured soils including sandy loam, loam, clay loam and silt loam, which account for 87% area of the State.
- Direct seeding of pre-germinated rice has resulted in to the reduced methane emissions due to a shorter flooding period and decreased soil disturbance compared to transplanting rice seedlings.

### 4. Need for Change in Technique

- Farmers, however, pointed out that the shortage of labour and economic compulsions rising out of COVID-19 lockdown has compelled them to move towards DSR.
- Punjab has a target to sow paddy on 26 lakh hectares, including around seven lakh hectares under highly remunerative basmati rice, this season.
  - For this, the state needs at least 600,000 labourers to transplant paddy if it goes by the traditional method.

### 5. Challenges to Direct Seeding of Rice

- A major problem with the DSR is that of weeds. In traditional system, the sapling is taller than the weeds right from the time of transplanting and there is no problem at the time of harvest.
  - But in DSR both the weeds and the plant grow simultaneously and it is bound to cause major problem at the time of harvest.
- The farmers have not been trained and guided properly in the DSR. They do not know at what depth they need to put the seed. DSR method may also give less yield.
- Further, promoting DSR could corporatise agriculture which will harm the farmer and the country.
- The marginal and small farmers are not in a position to purchase seeding machines and pushing them towards these machines will add to their burden of debt.
- The DSR needs to be first well-established and it needs to be ensured that farmers will get the required seeds and herbicides from the government agencies and not the multinational corporations.



## 07 Rising of India's Forex Reserves

### 1. Why in News?

- For the first time ever, India's forex reserves crossed \$500 billion.
- At over \$500 billion, India is the fifth largest holder of foreign exchange and can cover 17 months of its imports.



### 2. Long March

- Unlike in 1991, when India had to pledge its gold reserves to stave off a major financial crisis, the country can now depend on its soaring foreign exchange reserves to tackle any crisis on the economic front.
- While the situation is gloomy on the economic front with gross domestic product (GDP) set to contract for the first time in 40 years and manufacturing activity and trade at standstill, this is one data point that India can cheer about amidst the COVID-19 pandemic.
  - ☛ While it jumped by \$8.2 billion in the week ended June 5, 2020, it is important to note that since the announcement of lockdown in March, it has surged by \$31.8 billion.
- Hitting an all-time high of \$501.7 billion as on June 5, 2020, India has come a long way since its forex reserves of \$5.8 billion as of March 1991.

### 3. What are Forex Reserves?

- Forex reserves are external assets in the form of gold, special drawing rights (SDRs) of the International Monetary Fund (IMF) and foreign currency assets (capital inflows to the capital markets, FDI and external commercial borrowings) accumulated by India and controlled by the Reserve Bank of India.
- The IMF says official foreign exchange reserves are held in support of a range of objectives like supporting and maintaining confidence in the policies for monetary and exchange rate management including the capacity to intervene in support of the national or union currency.

### 5. Significance

- The rising forex reserves give a lot of comfort to the government and the RBI in managing India's external and internal financial issues at a time when the economic growth is set to contract by 1.5 per cent in 2020-21.
- The rising reserves have also helped the rupee to strengthen against the dollar. The foreign exchange reserves to GDP ratio is around 15 per cent.
- Reserves will provide a level of confidence to markets that a country can meet its external obligations, demonstrate the backing of domestic currency by external assets, assist the government in meeting its foreign exchange needs and external debt obligations and maintain a reserve for national disasters or emergencies.

### 4. Reasons behind Rising

- **Inflows**
  - ☛ The major reason for the rise in forex reserves is the rise in investment in foreign portfolio investors in Indian stocks and foreign direct investments (FDIs).
  - ☛ Foreign investors had acquired stakes in several Indian companies in the last two months. According to the data released by RBI, while the FDI inflow stood at \$4 billion in March, it amounted to \$2.1 billion in April.
  - ☛ After pulling out Rs 60,000 crore each from debt and equity segments in March, Foreign Portfolio Investments (FPIs), who expect a turnaround in the economy later this financial year, have now returned to the Indian markets and bought stocks worth over \$2.75 billion in the first week of June.
- **Situational Advantages**
  - ☛ The fall in crude oil prices has brought down the oil import bill, saving precious foreign exchange.
  - ☛ Similarly, overseas remittances and foreign travels have fallen steeply – down 61 per cent in April from \$12.87 billion.
  - ☛ The sharp jump in reserves seen over the last nine-months started with the finance minister, Nirmala Sitharaman's announcement to cut corporate tax rates on September 20. Since then the forex reserves have grown by \$73 billion.

# 7 MCQ's WITH EXPLANATORY ANSWERS

(Based on Brain Boosters)

## 01 Social Bubbles

**Q. With reference to the 'social bubbles', consider the following statements:**

1. The idea of 'social bubbles' is based on New Zealand's model of household 'bubbles' - an exclusive social group that is allowed to meet with each other amid the pandemic.
2. 'Social bubbles' could lead to improved compliance with official recommendations and 'keep the curve' flat, in terms of COVID-19 infections.

**Which of the statements given above is/are correct?**

- |                 |                    |
|-----------------|--------------------|
| a) 1 only       | b) 2 only          |
| c) Both 1 and 2 | d) Neither 1 nor 2 |

**Answer: (c)**

**Explanation: Both statements are correct.** A new study published in Nature Human Behaviour suggests that one of the ways of effective social distancing strategies to keep the COVID-19 curve flat include the idea of social bubbles.

The idea of 'social bubbles' is based on New Zealand's model of household 'bubbles'- an exclusive social group that is allowed to meet with each other amid the pandemic.

According to the study, lifting the lockdown in favour of strategic distancing, could lead to improved compliance with official recommendations and 'keep the curve' flat, in terms of COVID-19 infections. 

## 02 Silent Hypoxia

**Q. Consider the following statements with reference to the 'silent hypoxia':**

1. Hypoxia is a condition wherein there is access amount of oxygen available to the blood and body tissues.
2. In this condition, the people are left feeling breathless.

3. Feeling breathless is not because of the rise in oxygen levels itself, but due to the fall in carbon dioxide levels that occur at the same time.

**Which of the statements given above is/are correct?**

- |                 |                      |
|-----------------|----------------------|
| a) 1 and 2 only | b) 2 only            |
| c) 3 only       | d) None of the Above |

**Answer: (d)**

**Explanation: All statements are incorrect.** Hypoxia is a condition wherein there is not enough oxygen available to the blood and body tissues. Hypoxia can either be generalised, affecting the whole body, or local, affecting a region of the body.

The reason why people are left feeling breathless is not because of the fall in oxygen levels itself, but due to the rise in carbon dioxide levels that occur at the same time, when lungs are not able to expel this gas efficiently. This response does not appear to be kicking in in some Covid-19 patients. 

## 03 Disqualification Shadow on 7 Nagaland MLAs

**Q. With reference to the 'anti-defection law', consider the following statements:**

1. The law recognises 'split' and 'merger' that require at least two-third members of a legislature party to join another political formation or form a new one.
2. The 10th schedule of the Constitution bars judicial scrutiny of a speaker's decision to disqualify a member on account of defection or anti-party activities.

**Which of the statements given above is/are correct?**

- |                 |                    |
|-----------------|--------------------|
| a) 1 only       | b) 2 only          |
| c) Both 1 and 2 | d) Neither 1 nor 2 |

**Answer: (d)**

**Explanation:**

**Both statements are incorrect.** Instead of 'split', it recognises a 'merger' that requires at least two-third members of a legislature party to join another political formation or form a new one without inviting the wrath of the anti-defection law.

The 10th schedule of the Constitution bars judicial scrutiny of a speaker's decision to disqualify a member on account of defection or anti-party activities. However, the top court struck down this provision in a judgement in 1992.



## 04 Oil Spill in Russia's Arctic Region

**Q. Consider the following statements with reference to the 'oil spill in Russia's Arctic region':**

1. This is the second-largest known oil leak in modern Russia's history in terms of volume.
2. The Ambarnaya river, into which the oil has been discharged, is part of a network that flows into the environmentally sensitive Arctic Ocean.

**Which of the statements given above is/are correct?**

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

**Answer: (c)**

**Explanation: Both statements are correct.** World Wildlife Fund described this as the second-largest known oil leak in modern Russia's history in terms of volume.

Reports said that around 20,000 tonnes of diesel oil was released into the Ambarnaya river, which has since drifted 12 km on its surface. The Ambarnaya river, into which the oil has been discharged, is part of a network that flows into the environmentally sensitive Arctic Ocean.



## 05 Sixth Mass Extinction

**Q. With reference to the 'sixth mass extinction', consider the following statements:**

1. A mass extinction is usually defined as a loss of about three quarters of all species in existence across the entire Earth over a short geological period of time.
2. So far, during the entire history of the Earth, there have been five mass extinctions.
3. The sixth, which is on-going, is referred to as the Anthropocene extinction.

**Which of the statements given above is/are correct?**

- a) 1 only
- b) 2 and 3 only
- c) 3 only
- d) 1, 2 and 3 only

**Answer: (d)**

**Explanation: All statements are correct.** A mass extinction is usually defined as a loss of about three quarters of all species in existence across the entire Earth over a "short" geological period of time. Given the vast amount of time since life first evolved on the planet, "short" is defined as anything less than 2.8 million years.

So far, during the entire history of the Earth, there have been five mass extinctions. The sixth, which is ongoing, is referred to as the Anthropocene extinction.



## 06 Direct Seeding of Rice

**Q. With reference to the 'direct seeding of rice', consider the following statements:**

1. The Punjab government has made this method mandatory for seeding the rice this year.
2. Dry and wet seeding are the methods of direct seeding of rice.
3. Promoting DSR could corporatise agriculture which will harm the farmer and the country.

**Which of the statements given above is/are correct?**

- a) 1 and 2 only
- b) 2 and 3 only
- c) 3 only
- d) None of the above

**Answer: (b)**

**Explanation:**

**Statement 1 is incorrect.** To cope up with the labour scarcity amid the COVID-19 pandemic, the Punjab government has stepped up its efforts to encourage farmers to switch over to direct seeding of rice (DSR) instead of the traditional transplantation of paddy this year.

**Statement 2 and 3 are correct.** Dry and wet-seeding, in which seeds are sown directly in the main field instead of transplanting rice seedlings, are commonly referred to as direct seeding.

The marginal and small farmers are not in a position to purchase seeding machines and pushing them towards these machines will add to their burden of debt. Further, promoting DSR could corporatise agriculture which will harm the farmer and the country.





## 07 Rising of India's Forex Reserves

**Q. Consider the following statements with reference to the 'forex reserves of India':**

1. India's forex reserves crossed \$500 billion mark for the first time ever in June, 2020.
2. Forex reserves are external assets in the form of gold, special drawing rights (SDRs) of the International Monetary Fund (IMF) and foreign currency assets.
3. India's forex reserves are controlled jointly by the Reserve Bank of India and Ministry of Finance.

**Which of the statements given above is/are correct?**

- a) 1 only                      b) 2 only

c) 3 only

d) 1 and 2 only

**Answer: (d)**

**Explanation:**

**Statement 1 and 2 are correct.** India's forex reserves crossed \$500 billion mark for the first time ever in June, 2020. At over \$500 billion, India is the fifth largest holder of foreign exchange and can cover 17 months of its imports.

**Statement 3 is incorrect.** Forex reserves are external assets in the form of gold, special drawing rights (SDRs) of the International Monetary Fund (IMF) and foreign currency assets (capital inflows to the capital markets, FDI and external commercial borrowings) accumulated by India and controlled by the Reserve Bank of India.



# 7 IMPORTANT NEWS

01

## World Day to Combat Desertification and Drought 2020

- ◆ World Day to Combat Desertification and Drought, a United Nations observance day held on 17 June each year. This year the theme for World Day to Combat Desertification And Drought is "Food. Feed. Fibre". Food, feed, fibre is also contributing to climate change, with around a quarter of greenhouse gas emissions coming from agriculture, forestry and other land use. Clothing and footwear production causes 8 per cent of global greenhouse gas emissions, a figure predicted to rise almost 50 per cent by 2030.
- ◆ Desertification and Drought Day – until this year known as The World Day to Combat Desertification and Drought – is observed every year to promote public awareness of international efforts to combat desertification.

### Key Objectives

- ◆ To promote public awareness of the issue.
- ◆ To let people know that desertification and drought can be effectively tackled, that solutions are possible, and that key tools to this aim lay in strengthened.

**Food. Feed. Fibre.**  
Sustainable production and consumption



17 June 2020

**DESERTIFICATION  
AND DROUGHT DAY**

- ◆ community participation and cooperation at all levels.
- ◆ To strengthen implementation of the United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa.

### Scale of the Problem

- ◆ Globally, 23 per cent of the land is no longer productive. 75 per cent has been transformed from its natural state, mostly for agriculture. This transformation in land use is happening at a faster rate than at any other time in human history, and has accelerated over the last 50 years. Scientists say the evolution

from one state to the next is so rapid, the process is only observable over very short periods. Everyone needs to know that desertification, land degradation and drought (DLDD) have direct affect on their daily lives, and that everyone's daily actions can either contribute to, or help fight DLDD.

- ◆ Today, more than two billion hectares of previously productive land is degraded.
- ◆ Over 70 per cent of natural ecosystems have been transformed. By 2050, this could hit 90 per cent.
- ◆ By 2030, food production will require an additional 300 million hectares of land.



02

## Amendment to Drop the Mandatory Washing of Coal

- ◆ The government of India has issued the notification to amend the Environment Protection Act to drop the mandatory washing of coal supplied to thermal power plants. This notification undid the government's 2016 order, which made coal washing mandatory for supply to all thermal units more than 500 km from the mine as part of its climate-change commitments.



keeping in view that ultimately all coals, irrespective of distance from supplying mines, will have to be washed and comply with less than 34 per cent ash limit.

### Issues

- ◆ According to the experts, the notification would "undo whatever limited progress" was made so far in reducing pollution load at coal-based power stations.
- ◆ From January 2014 onwards, the Environment Ministry had been working towards "progressive reduction" of distance that unwashed coal would travel,
- ◆ Further, they said that the combustion of washed coal would be better from an emissions and local air pollution perspective, and the unnecessary transport of large amounts of ash and non-combustible material would be minimized.

### Government's Argument

- ◆ The government in consultation with the Ministry of Coal, Power and NITI Ayog, agreeing that coal washing does not help reduce emissions. The coal rejects from washery find their way into the market for use by industries and create pollution. Coal ministry said washing of coal is unable to meet its intended objective as it merely localises the pollution around coal mines which otherwise would have been distributed over larger areas.
- ◆ The ministry has instead directed thermal power plants to install the technology for handling ash content.
- ◆ Earlier the ministry had advocated pollution-control technologies such as Flue Gas Desulphurization (FGD) at the end of power generation units. Several industry executives had contested it, saying it was not an alternative to coal washing.



03

## World Crocodile Day 2020

- ◆ World Crocodile Day is celebrated on 17th June every year. The day is set aside as a global awareness campaign to highlight the plight of endangered crocodiles and alligators around the world.
- ◆ The mugger is the most widespread, found in other South Asian countries too. The gharial is found mostly in Himalayan rivers. The estuarine crocodile is found in Odisha's Bhitarkanika National Park, the Sundarbans in West Bengal and the Andamans and Nicobar Islands. It is also found across Southeast Asia and northern Australia.
- ◆ The estuarine crocodile is infamous globally as a known man-eater. The mugger is also known to be dangerous. The gharial is known to be a relatively harmless, fish-eating species.

### Crocodiles in India

- ◆ India is home to three crocodilian species:
- ◆ The mugger or marsh crocodile (*Crocodylus palustris*);
- ◆ The estuarine or saltwater crocodile (*Crocodylus porosus*); and The gharial (*Gavialis gangeticus*).

### Human-Crocodile Conflict

- ◆ The crocodiles, in general, keep hitting headlines due to conflicts with humans, often resulting in the loss of life or limb. In India too, there is conflict between humans and saltwater crocodiles where the species is found.
- ◆ According to the crocodilian experts there are four human-crocodile conflict hotspots in India: Vadodara in Gujarat, Kota in Rajasthan, Bhitarkanika in Odisha and the Andaman and Nicobar Islands.





04

## Civil Services Board in Punjab

- ◆ The Punjab government has constituted a three-member civil services board under the chief secretary to decide on IAS transfers and postings in the state. The board will be headed by chief secretary of a state. It will also have senior most additional chief secretary or chairman, Board of Revenue, Financial Commissioner or an officer of equivalent rank and status as member.

### Key Functions

- ◆ The board will provide the state to follow Centre's guidelines on giving a fixed tenure of at least two years for cadre officers. They cannot be transferred before that and if anyone recommends their transfer then the board will examine and effect it. The final authority is the Chief Minister.



### Previous Government's Stand

- ◆ Previous government led by former Chief Minister Parkash Singh Badal had refused to follow the guidelines on the argument that appointment and transfer of IAS officers are a prerogative of the state. If their term is fixed, it had argued, it will not only create functional and administrative problems, but also overstep the authority and jurisdiction of the state government.

### Present Government's Argument

- ◆ It says if the officials have a fixed tenure they will be able to provide better administration. They will also feel safe and try to stick to the rules instead of pleasing political bosses. It says every official requires 3-6 months to get into the groove at his new place of posting. If he stays there for two years, it would mean better delivery and stable tenure to people. <>>

05

## Keeladi's 6<sup>th</sup> Phase Excavation

- ◆ Skeletal remains of a child were excavated from Konthagai village, part of the sixth phase of ongoing excavations in the ancient site of Keeladi. The skeleton was found buried between two terracotta urns that were also found on the same day. It was 75 cm in height and was found 0.5 m below surface level.
- ◆ Excavations are currently taking place at Keeladi, Konthagai, Manalur and Agaram villages in Sivaganga district. Konthagai village, located around 2 km from Keeladi, is believed to be a burial site.

- ◆ Two other skeletal remains of adults were found at Konthagai during this phase. A total of 15 urns have been found till date. A gold coin that is said to have been used extensively in the 17th century AD, some shells and pots, have also been found during the excavation, in all four sites.

### About Gold Coin

- ◆ The coin dates back to the 17th Century AD, and used to be referred to as 'Veerarayan' coin.
- ◆ This coin was in use during the 17th century AD. On the top

of one side of the coin, there is a marking that looks like a 'naamam' (religious marking on the forehead), the middle has a marking that looks like the sun and below it is an image of a lion. On the other side, there are 12 dots; below that is an image with two hands and two legs.

- ◆ Different types of 'Veerarayan' coins have been found earlier in Thanjavur, some dating to 16th Century A.D., and 17th Century A.D. The markings on these coins have some variations depending on the regions where they were in vogue. <>>

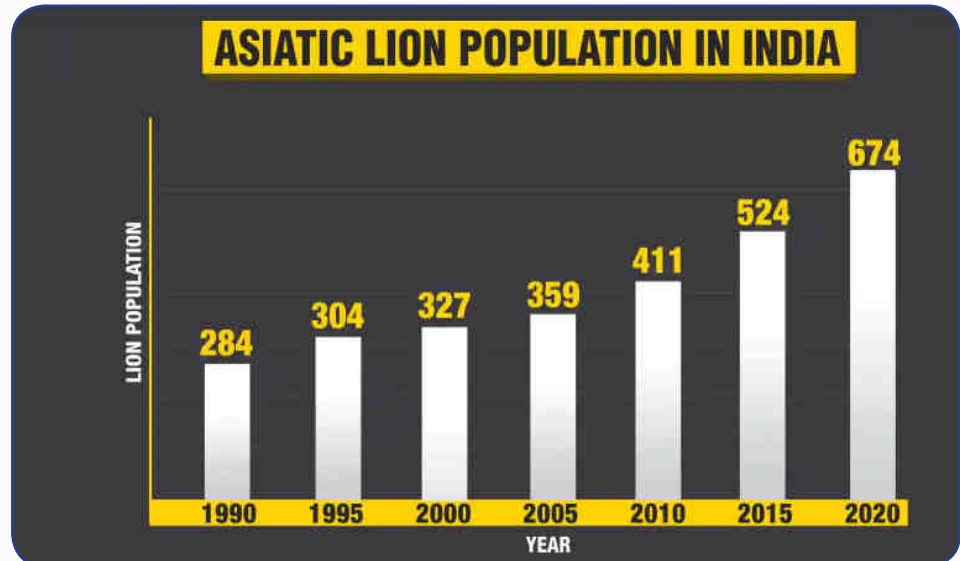
06

## Population of Asiatic Lions

- ◆ The Gujarat Forest Department has announced the population of Asiatic lions in the state — 674, up from 523 in a Lion Census five years ago. Unlike in previous years, this count was estimated not from a Census, but from a population “observation” exercise called 'Poonam Avlokan'.

### Key Highlights

- ◆ Through Poonam Avlokan, which is a monthly in-house exercise carried out every full moon. Field staff and officers spend 24 hours assessing the number of lions and their locations in their respective jurisdictions. It was a mechanism developed by the Forest Department in 2014 as part of preparations for the 2015 Lion Census.
- ◆ This time, the exercise covered 10 districts where lion movements have been recorded in recent years, and 13 forest divisions. All these divisions, save Surendranagar and Morbi, were part of the 2015 Lion Census too.



### Different from Regular Exercise

- ◆ The Lion Census involves larger participation. Around 2,000 officers, experts and volunteers were involved in the 2015 Census. That makes the Census more transparent. The lion ‘observation’ this month was conducted by around 1,400 forest staff and a few experts.
- ◆ A ‘lion observation’ is an in-house exercise, conducted only by forest staff. The methodology too is different as, instead of remaining stationary at water points, teams keep moving in their respective territories and

make their estimates based on inputs provided by lion trackers and on chance sightings.

### Significance

- ◆ The 2020 count is particularly important. The 2015 Census had counted 523 lions, up from 411 in 2010. But 12 lions were killed in a flash flood in Amreli just a month after the 2015 census, followed by deaths of more than two dozen lions in an outbreak of canine distemper virus (CDV) and babesiosis in 2018. A babesiosis outbreak was reported in Gir (east) this summer too, and around two dozen lions are reported killed.



07

## Ocean Floor Mapping

- ◆ Announcing a new milestone in the history of marine exploration, an international collaboration of researchers said on June 21 that it had finished mapping nearly one-fifth of the world’s ocean floor.

### Key Highlights

- ◆ The Nippon Foundation-GEBCO Seabed 2030 Project, which is coordinating efforts to complete the mapping of the entire ocean floor by 2030, said on World

Hydrography Day (June 21) that it had added 1.45 crore square kilometres of new bathymetric data to its latest grid. Since the launch of the project in 2017, the surveying of the ocean bed as per

modern standards has gone up from around 6 per cent to 19 per cent.

### Importance

- ◆ The knowledge of bathymetry — the measurement of the shape and depth of the ocean floor — is instrumental in understanding several natural phenomena, including ocean circulation, tides, and biological hotspots. It also provides key inputs for navigation, forecasting tsunamis, exploration for oil and gas projects, building offshore wind turbines, fishing resources, and for laying cables and pipelines. This data becomes highly valuable during disaster situations.
- ◆ Importantly, the maps would also ensure a better understanding of climate change, since floor features including canyons and underwater volcanoes influence phenomena such as the vertical mixing of ocean water, and ocean currents — which act as conveyor belts of warm and cold water, thus influencing the weather and climate. Climate change has impacted the flow of these



currents, and more knowledge about them would help scientists create models forecasting the future behaviour of the climate, including sea-level rise.

- ◆ A map of the entire global ocean floor would also help further achieve the United Nations Sustainable Development Goal to conserve and sustainably use oceans, seas and marine resources.

### About Seabed 2030 Project

- ◆ The global initiative is a collaboration between Japan's non-profit Nippon Foundation and the General Bathymetric

Chart of the Oceans (GEBCO). As per its website, GEBCO is the only intergovernmental organisation with a mandate to map the entire ocean floor, and traces its origins to the GEBCO chart series initiated in 1903 by Prince Albert I of Monaco.

- ◆ The Project was launched at the United Nations Ocean Conference in 2017, and coordinates and oversees the sourcing and compilation of bathymetric data from different parts of the world's ocean through its five centres into the freely-available GEBCO Grid.





# 7

## IMPORTANT PRACTICE QUESTIONS (For Mains)



- 01 What do you understand by the knowledge of bathymetry? Discuss the importance of the knowledge of bathymetry to ensure the better understanding of climate change.
- 02 The violent standoff between Indian and Chinese troops in Galwan Valley of Ladakh region has thrown the spotlight on high-altitude warfare. Discuss, how is India equipped in such warfare.
- 03 What is the Arctic heatwave? Discuss the impact of these heatwaves on the Arctic region.
- 04 During COVID-19, tele-medicine has gained rapid momentum and will empower patients to make quick decisions and also teach them self-care. Elaborate.
- 05 Food, feed, fibre is contributing to climate change, with around a quarter of greenhouse gas emissions coming from agriculture, forestry and other land use. Explain.
- 06 As India enters a technology-driven world, digital media is redefining modes of political communication and mass contact. Discuss.
- 07 Amid China's pre-meditated military moves, there is a pressing need for India to develop a comprehensive Underwater Domain Awareness strategy to not lose sight of its surrounding seas. Do you agree? Analyse.

# 7

## IMPORTANT FACTS (For Prelims)



- 01 Which ministry has launched an initiative 'YUKTI 2.0' to help systematically assimilate technologies having commercial potential and information related to incubated startups in higher education institutions?

The Ministry of Human Resource Development
- 02 Which country has recently joined the United Nations Arms Trade Treaty?

China
- 03 Where is 'Mount Merapi', an active volcano located?

Indonesia
- 04 Which glacier has recently covered with tarpaulin to slow down the catastrophic effects of global warming?

Italy's Presena Glacier
- 05 What is the position of Gee's Golden Langur (*Trachypithecus geei*) in IUCN Red List ?

Endangered Species
- 06 Which state has launched 'Ektu Khelo, Ektu Padho' which means 'Play little, Study little' for school students?

Tripura
- 07 Which ministry has launched a portal "SATYABHAMA (Science and Technology Yojana for Atmanirbhar Bharat in Mining Advancement)" with an aim to promote research and development in the mining and minerals sector?

The Ministry of Mines

# 7

## IMPORTANT QUOTES

(For Essay and Answer Writing)



01



03



05

01

"When women do better economies do better"

Christina Lagarde

02

"The price good men pay for indifference to public affairs is to be ruled by evil men."

Plato

03

"You may delay but time will not."

Benjamin Franklin

04

"It has always been a mystery to me how men can feel themselves honored by the humiliation of their fellow beings"

Mahatma Gandhi

05

"If agriculture fails, everything else will fail."

M. S. Swaminathan

06

"You can't cross the sea merely by standing and staring at the water."

Ravindra Nath Tagore

07

"Honesty is the first chapter of the book of wisdom."

Thomas Jefferson



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