PERFECT WEEKLY CURRENT AFFAIRS

September: 2019 / Issue-04

PEEKING AND MAPPING THE UNIVERSE

Through Telescopes

- Bioterrorism : A Global Challenge
- Next Generation of Reforms in Peacekeeping : Need of the Hour
- South China Sea Dispute and Its Role in International Politics
- Insolvency and Bankruptcy Code : Journey So Far
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DHYEYA IAS : AN INTRODUCTION



The 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 wellrounded personality development of the students and also in inculcating the values of honesty and integrity in them.

Vinay Kumar Singh CEO and Founder Dhyeya IAS



Dheya IAS is an institution that aims at the complete development of the student. Our faculty are handpicked 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.

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> **Q H Khan** Managing Director Dhyeya IAS

PERFECT 7 : AN INTRODUCTION



With immense pleasure and gratitude I want 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.

I extend best wishes for the success of this endeavor.

Qurban Ali Chief Editor Dhyeya IAS (Ex Editor- Rajya Sabha TV)



We 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 challenging as well as most important thing. 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 'overdose of information'. Focusing on civil services exams 'Perfect 7' embodies in itself rightful 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.

The new 'avatar' of 'Perfect 7' is a result of your love and affection. We feel inspired to continue our efforts to deliver effective and valuable content in interesting manner. Our promise of quality has reached you in around 100 issues and more are yet to come.

> Ashutosh Singh Managing Editor Dhyeya IAS





Certificate awarded to

Dhyeya IAS represented by Mr. Vinay Singh

for their contribution in the field of education by

Shri Ram Naik Hua'ble Governor of Uttar Pradesh

on 27th June, 2015 at Lucknow

PREFACE

Dhyeya family feels honoured to present you a pandora box 'Perfect 7'. 'Perfect7' is an outstanding compilation of current affairs topics as per the new pattern of Civil Service 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 civil service examination. 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

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DHYFYA T\ **Current Affairs Programmes hosted** by Mr. Qurban Ali (Ex. Editor Rajya Sabha, TV) & by Team Dhyeya IAS (Broadcasted on YouTube & Dhyeya-TV)

SIDVIDIN IIMIPORATYANAT IISSUIDS

1. PEEKING AND MAPPING THE UNIVERSE THROUGH TELESCOPES

Why in News?

Chinese astronomers have detected repeated fast radio bursts (FRB), mysterious signals believed to be from a source about 3 billion light-years from the Earth, with the largest and most sensitive radio telescope ever built. Scientists detected the signals with the 500-meter Aperture Spherical Radio Telescope (FAST) and they are carefully cross-checking and processing them.

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#### Introduction

The universe is pouring out information on its extent, structure, composition, variety of objects, their relative motions, their temperatures, time variations, the electric and magnetic fields in the various regions, the physico-chemical and biological evolutionary chains and a host of other details, in the form of a variety of particulate and electromagnetic, radiations, neutrino. Perhaps exotic particles yet unidentified, and has left it to the ingenuity of man to record these radiations and come out with a consistent, meaningful understanding of the origin, the fundamental constituents and the forces behind the vast range of phenomena witnessed. In this endeavour naked eye astronomy was naturally the oldest dating back to several millennia, followed by telescopic observation starting with Galileo in the 16<sup>th</sup> century, spectroscopic observations of celestial objects planets and stars in the 19th century.

The installation of the large telescopes at Mount Wilson and Mount Palomar in California were landmark events in the long history of optical astronomy. A vast amount of data has been collected and analysed and very many intricate aspects of the universe have been figured out on the basis of optical astronomy alone eventhough it is based on an extremely narrow band of the electromagnetic spectrum. The development of space technology has enabled astronomers to put telescopes above the atmosphere and explore all of those places out there using the full range of the electromagnetic spectrum.

#### What is a Telescope?

A telescope is an instrument that aids in the observation of remote objects by

collecting electromagnetic radiation (such as visible light). The word telescope now refers to a wide range of instruments detecting different regions of the electromagnetic spectrum, and in some cases other types of detectors.

**Types of Telescopes I:** There are three main classes of telescopes available to the amateur astronomer. These are: refractor telescopes, reflector telescopes and cadioptric telescopes.

**Types of Telescope II:** Telescopes may be classified by the wavelengths of light they detect. Such as, optical telescope, radio telescopes, X-Ray telescopes and Gamma-ray Telescopes.

#### What is Astronomy?

Astronomy is a natural science that studies celestial objects (such as moons, planets, stars, nebulae, and galaxies), the physics, chemistry, mathematics, and evolution of such objects, and phenomena that originate outside the atmosphere of Earth, including supernovae explosions, gamma ray bursts, and cosmic background radiation. In astronomy, the main source of information about celestial bodies and other objects is the visible light or more generally electromagnetic radiation.

**Optical astronomy**, also called visible light astronomy, is the oldest form of astronomy. Modern images are made using digital detectors, particularly detectors using charge-coupled devices (CCDs).

**Radio astronomy** studies radiation with wavelengths greater than approximately one millimeter. A wide variety of objects are observable at radio wavelengths, including supernovae, interstellar gas, pulsars, and active galactic nuclei.

**Infrared astronomy** deals with the detection and analysis of infrared radiation (wavelengths longer than red light). The infrared spectrum is useful for studying objects that are too cold to radiate visible light, such as planets and circumstellar disks.

**Ultraviolet astronomy** is generally used to refer to observations at ultraviolet wavelengths. The objects commonly observed in ultraviolet light include planetary nebulae, supernova remnants, and active galactic nuclei.

X-ray astronomy is the study of astronomical objects at X-ray wavelengths.

**Gamma ray astronomy** is the study of astronomical objects at the shortest wavelengths of the electromagnetic spectrum.



#### Space vs Ground based Telescopes

Today, thousands of ground-based telescopes operate across the globe, with astronomers capturing new views of the universe and new knowledge every day. Ground-based telescopes have long been the workhorses of astronomical research. Compared to space-based telescopes, groundbased telescopes have much to offer. They can be built bigger and for less money. But increasingly, scientists and engineers are turning to space as the new frontier for advanced telescopes. The trend toward space telescopes began in the 1960s, when astronomers started attaching giant balloons to telescopes as a means to carry them above Earth's lower atmosphere. Their goal was to get a sharper view.

While ground-based telescopes are generally placed in isolated and elevated locations, which make it possible to observe terrestrial or celestial events. Prior to the late 19th century, observatories were placed at modest elevations and close to the cities and learning institutions for means of convenience. However, as the cities became crowded with air polluted by industrial smokes, the astronomers sought observatory sites in remote areas with a clear sky and were naturally drawn to the mountains. Since the 20<sup>th</sup> century, high altitude observatory sites have been developed.

Some of the important ground based telescopes of the world are MeerKAT radio telescope (South Africa), European Extremely Large Telescope (Chile), Giant Magellan Telescope (Chile), Thirty Meter Telescope (Hawaii), Five-hundredmeter Aperture Spherical Telescope (China), etc.

Space-based telescopes like Hubble get a much clearer view of the universe than most of their groundbased counterparts. They're also able to detect frequencies and wavelengths across the entire electromagnetic spectrum. Performing astronomy from the Earth's surface is limited by the filtering and distortion of electromagnetic radiation due to the Earth's atmosphere. This makes it desirable to place astrononomical observation devices into space. As a telescope orbits the Earth outside the atmosphere it is subject neither to twinkling (distortion due to thermal turbulences of the air) nor to light pollution from artificial light sources on the Earth. But space-based astronomy is even more important for frequency ranges which are outside of the optic window and the radio window, the only two wavelength ranges of the electromagnetic spectrum that are not severely attenuated by the atmosphere.

For example, X-ray astronomy is nearly impossible when done from the Earth, and has reached its current important stand within astronomy only due to orbiting satellites with X-ray telescopes such as the Chandra observatory or XMM-Newton observatory.

Some of the important space telescopes of the world are James Webb Space Telescope, Hubble Telescope, Spitzer Space Telescope, Kepler Mission, etc.

#### Contribution

Scientific and technological achievements give a large competitive edge to any nation. Nations pride themselves on having the most efficient new technologies and race to achieve new scientific discoveries.

The investment in astronomical telescopes, whether in space or on

#### Some Important Telescopes

**The James Webb Space Telescope (JWST or Webb):** It will study every phase in the history of our Universe, ranging from the first luminous glows after the Big Bang, to the formation of solar systems capable of supporting life on planets like Earth, to the evolution of our own Solar System. Webb is an international collaboration between NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA).

Wide Field Infrared Survey Telescope (WFIRST): It is a mission concept to answer vital questions in both exoplanet detection and dark energy research. The telescope will perform a number of measurements to help scientists study the evolution of dark energy since the Big Bang. WFIRST's work will include creating a precise map of the change in the distribution of galaxies over time, looking for supernovas and measuring their distance away from us, and measuring the shape of very large galaxies and galaxy clusters.

**Large UV Optical Infrared Surveyor (LUVOIR):** Like Hubble, LUVOIR would observe the universe in ultraviolet, infrared and visible wavelengths of light. LUVOIR is designed to tackle a variety of astronomical research projects, like searching for habitable exoplanets; studying the formation and evolution of stars and galaxies; mapping dark matter throughout the universe; and imaging objects in the solar system, like planets, comets and asteroids.

**The Habitable Exoplanet Observatory (HabEx):** It is designed to observe potentially habitable exoplanets around sun-like stars. While looking for "biosignatures" like water and methane, which may indicate the presence of life on another planet, HabEx would also become the first telescope to directly image an Earth-like exoplanet.

**Lynx X-Ray Observatory:** A potential successor to Chandra X-Ray Observatory is Lynx, a proposed space telescope that would uncover the "invisible" universe by detecting highenergy X-ray radiation that is not visible to the human eye. This means researchers could use the instrument to look for things like supernovas and black holes. It would also be able to investigate the birth and death of stars and capture "exquisite maps of exploding stars.

**Origins Space Telescope:** The Origins Space Telescope would help scientists break down the steps in that process by tracking the ingredients for life from the earliest stages of star and planet formation. This far-infrared surveyor mission would be able to peer through obscuring dust clouds to get a clear view of stars and exoplanets in star-forming regions. It could be considered a next-generation version of the Herschel Space Observatory, a European mission that observed the universe in infrared for four years before shutting down in 2013.

#### **Current Affairs : Perfect 7**

the ground, has to be justified by the scientific return and in selecting new facilities it is fundamentally the science which drives the decision. The value of the observations made by telescopes based both on the ground and in space can be measured not just by the scientific results in understanding the near and far universe, but also in the inspiration that these images and discoveries provide.

- Astronomy makes unexpectedly large contributions to formal and informal science education, given the small number of research astronomers.
- Technology transfer and spin-offs from astronomy have important applications in medicine, industry, defense, environmental monitoring, and consumer products.
- Mankind's view of its place in the world as a whole is strongly influenced by the results of astronomical research.
- Astronomy provides unusually promising opportunities for international cooperation.
- Other sciences benefit from synergistic interactions with astronomy.

### The Future of Space Astronomy

The Hubble Space Telescope has been in space for 28 years, producing some of the most beautiful and scientifically important images of the cosmos that humanity has ever taken. But let's face it, Hubble is getting old, and it probably won't be with us for too much longer. NASA's James Webb Space Telescope (JWST) is in the final stages of testing, and Wide Field Infrared Survey Telescope (WFIRST) is waiting in the wings.

A true successor to JWST will emerge from the next astrophysics

decadal survey, whose final report will be issued in late 2020. Four concepts for large space observatories are being studied for the decadal survey, namely Large UV Optical Infrared Surveyor (LUVOIR), The Habitable Exoplanet Observatory (HabEx), Lynx X-Ray Observatory and Origins Space Telescope, three of which involve large optical or infrared telescopes (the fourth is an X-ray telescope, Lynx that would be a successor to the Chandra X-Ray Observatory.)

#### Astronomy and Astrophysics Progress in India

Astronomy in India has a glorious past. There are documented evidences that Astronomy was studied in India from the Vedic times dating back to 1500 BC and then nurtured in the fifth and sixth century AD by the greats like Aryabhatta, Varahamihira, Brahmagupta that continued even when Europe was passing through the dark ages.

Modern day astronomy in India flourished after it gained independence. As on date, numerous institutes in India are doing frontline research in Astronomy and Astrophysics. India is contributing 10% of the estimated \$1.5 billion project mainly in kind in the form of preparing key parts of the primary mirror system, developing software, making actuators and sensors that will locate where one mirror is with respect to its neighbors.

The first dedicated Indian astronomy satellite, ASTROSAT, is designed for the study of cosmic sources simultaneously over a wide range of the electromagnetic spectrum; from optical bands to high energy X-rays.

Another major involvement is in the Laser Interferometer Gravitationalwave Observatory (LIGO) project. A consortium of several institutes in India have come under a single banner called IndIGO (Indian Initiative in Gravitational-wave Observations) to evolve a strategy towards turning the Indian gravitational-wave initiative into reality. The science benefits of this experiment are enormous given the multi-disciplinary nature of the experiment. It will attract and benefit scientists and engineers from fields like optics, lasers, gravitational physics, astronomy and astrophysics, cosmology, computational science, mathematics and various branches of engineering. The next major upcoming facility is the India-based neutrino observatory (INO). It is an underground facility to study fundamental issues in science especially neutrino oscillations. INO laboratory's design permits it to also host a dark matter decay experiment. In fact, DINO (dark matter at INO) experiment is being set up inside the underground INO laboratory.

#### **Indian Existing Facilities**

#### **Optical and Infra-red Astronomy**

- 2.3M Vainu Bappu Telescope at Kavalur.
- 2M Telescope (Chandra Telescope) at Hanle, IAO, Hanle.
- 1M Class Telescopes at Kavalur.

#### **Solar Facilities**

- Solar Optical Observatory at Kodaikanal.
- Gauribidanur Radioheliographs.

#### **Radio Astronomy**

 Radio Array at Gauribidanur: The Gauribidanur Observatory, a radio astronomy facility, mainly focuses on the observations of the Sun.

#### Way Forward

Astronomy and related fields are at the forefront of science and technology; answering fundamental questions and driving innovation. Although blueskies research like astronomy rarely contributes directly with tangible outcomes on a short time scale, the pursuit of this research requires cuttingedge technology and methods that can





on a longer time scale, through their broader application make a difference. A wealth of examples show how the study of astronomy contributes to technology, economy and society by constantly pushing for instruments, processes and software that are beyond our current capabilities. As far as India is concerned, India is marching ahead in astronomy research aided by ground based, balloon borne and satellite facilities. The future of astronomy in India is bright and the next decade promises a substantial contribution coming from India.

### General Studies Paper- III

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

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## 2. BIOTERRORISM : A GLOBAL CHALLENGE

#### Why in News?

During the Shanghai Cooperation Organisation's (SCO's) first military medicine conference, Defence Minister of India Rajnath Singh said that bioterrorism is a real threat in today's time and the armed forces medical services should be at the forefront of combating the menace.

#### Introduction

Bioterrorism covers a very broad spectrum of concerns, from catastrophic terrorism with mass casualties, to microevents using low technology but producing civil unrest, disruption, disease, disabilities and death. The threat of bioterrorism, long ignored and denied, has heightened over the past few years. The international terrorist attacks are changing over the past years towards the use of more deadly weapons for massive civil disruption. Most terrorists use explosive and guns but some groups now show interest in using chemical, biological, radiological, or nuclear (CBRN) materials in order to cause mass casualties. Many countries are possessed, pursued or capable of acquiring weapons. In contrast of accessing functional chemical, radiological or nuclear materials, biological materials are produced easily.

We are ill prepared to deal with a terrorist attack that employs biological weapons. As was done in response to the nuclear threat, the medical community should educate the public and policy makers about the threat. In the longer term, we need to be prepared to detect, diagnose, characterize epidemiologically, and respond appropriately to biological weapons use and the threat of new and re-emerging infections. On the immediate horizon, we cannot delay the development and implementation of strategic plans for coping with civilian bioterrorism.

## What are Biological Weapons?

Biological weapons are complex systems that disseminate diseasecausing organisms or toxins to harm or kill humans, animals or plants. They generally consist of two parts – a weaponized agent and a delivery mechanism.

Almost disease-causing any organism (such as bacteria, viruses, fungi, prions or rickettsiae) or toxin (poisons derived from animals, plants or microorganisms, or similar substances produced synthetically) can be used in biological weapons. The agents can be enhanced from their natural state to make them more suitable for mass production, storage, and dissemination as weapons. Historical biological weapons programs have included efforts to produce: aflatoxin; anthrax; botulinum toxin; foot-and-mouth disease; glanders; plague; Q fever; rice blast; ricin; Rocky

Mountain spotted fever; smallpox; and tularaemia, among others.

#### **Classification of Biological Agents**

The Center for Disease Control and Prevention ranks the biological agents and diseases that have the potential to be used as weapons into three categories. These are:

- ٠ Category A agents are the highest priority, and these are disease agents that pose a risk to national security because they can be transmitted from person to person and/or result in high mortality, and/or have high potential to cause social disruption. These are anthrax, botulism (via botulinum toxin, which is not passable from person to person), plague, smallpox, tularemia, and a collection of viruses that cause hemorrhagic fevers, such as Ebola, Marburg, Lassa, and Machupo. These disease agents exist in nature (with the exception of smallpox, which has been eradicated in the wild), but they could be manipulated to make them more dangerous.
- Category B agents are moderately easy to disseminate and result in low mortality. These include brucellosis, glanders, Q fever, ricin toxin, typhus fever, and other agents.
- Category C agents include emerging disease agents that could be engineered for mass dissemination in the future, such as Nipah virus.



#### **Targets of Bioterrorism**

Bioterrorism have devastating effect on the environment. Most of the bioweapons are relatively easy to generate, inexpensive and capable of mass destruction while using small quantities by simple means. Potential targets for bioweapons are water supplies and water distribution systems as it is the critical need of every ecosystem health and also to the smooth functioning of a commercial and economy sector of our industrialized society. Agriculture is another perfect target for bioterrorism which uses highly contagious, virulent and resistant agents that result in economic hardship on countries. In addition, animals, plants and birds could also be targeted for biological threat generation.

According to World Organization for Animal Health (OIE), 80% of pathogens used for biowarfare are of animal origin and 60% of human pathogens are zoonotic. Furthermore, there are many animal foreign agents (foot and mouth disease virus, Bacillus anthracis and African swine fever virus) that are readily available in the nature and also from commercial sources, which require little effort in handling and dispersing these pathogens.

#### Challenges from Non-State Actor

There is plenty of consensus that the use of biological weapons by nonstate actors remains a tangible reality. Non-state actors have not hesitated to employ weapons of mass destruction (WMDs) when they were able to access such weapons and criminal elements are more than willing to assist terror organizations in attaining materials. Consider two examples, the Islamic State of Iraq and the Levant (ISIL) has used chemical weapons multiple times from available Syrian stockpiles or manufactured their own crude versions on the battlefields of Syria. And several criminals in Moldova were arrested when they attempted to sell radioactive material to what they thought was a terrorist group.

In addition to these incidents there are plenty of terrorism experts who conclude that sufficient evidence exists to believe that terrorist are pursuing WMD capabilities. Terrorist organizations from IS to Al-Qaeda continue to actively seek WMD capabilities, including biological weapons.

#### **Effective Control Measures**

Public health is an important pillar for any national security framework and therefore an effective response is required against bioterrorism. This can be achieved through multimodal and multiagency approach and many of these approaches are relatively straightforward. Effective control measures against bioterrorism include:

- Biosecurity: Biosecurity is the method to protect and control the unauthorized access, loss, theft, intentional release thereby risk of transmission of infectious diseases in crops and livestock, quarantined pests, invasive alien species and living modified organisms.
- Vigilance tools: Various past outbreaks have led to the understanding that a regional and even global response is needed. The early recognition of a bioterror agent is essential in ensuring effective containment and reduction of casualties.
- Research programs: Developing medical tools to counter bioweapons threats requires thorough knowledge of these microbes and the human immune system's response to them.
- Planning for risk management: Planning is outlining necessary actions, identifying resources,

assigning roles and responsibilities, and ensuring overall coordination which is crucial for combating bioterrorism.

#### Biological Weapons Convention

The Biological Weapons Convention (BWC) is a legally binding treaty that outlaws biological arms. After being discussed and negotiated in the United Nations' disarmament forum starting in 1969, the BWC opened for signature on April 10, 1972, and entered into force on March 26, 1975. It currently has 183 states-parties, including 109 signatory states. Ten states have neither signed nor ratified the BWC (Chad, Comoros, Djibouti, Eritrea, Israel, Kiribati, Micronesia, Namibia, South Sudan and Tuvalu). The BWC bans:

- The development, stockpiling, acquisition, retention, and production of:
  - Biological agents and toxins of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;
  - (ii) Weapons, equipment, and delivery vehicles designed to use such agents or toxins for hostile purposes or in armed conflict.
- The transfer of or assistance with acquiring the agents, toxins, weapons, equipment, and delivery vehicles described above.

The convention further requires states-parties to destroy or divert to peaceful purposes the "agents, toxins, weapons, equipment, and means of delivery" described above within nine months of the convention's entry into force. The BWC does not ban the use of biological and toxin weapons but reaffirms the 1925 Geneva Protocol, which prohibits such use. It also does not ban biodefense programs.



#### **Bioterrorism and India**

Few episodes in the past have heightened the threat of bioweapons in India such as the Scrub typhus outbreak in Assam and West Bengal of India during the Indo-Pakistan war in 1965. The outbreaks of pneumonic plague in Surat (Gujarat) and Bubonic plague in Beed (Gujarat) in 1994 resulted in mass casualties and increased attention to defense and intelligence outfits of India. In 2018, Nipah Virus outbreak in Kerala has the physical attributes to serve as a potential agent of bioterrorism. Further, India also appears ill-equipped to face the threat of bioterrorism, as was evident from the H1N1 epidemic, which claimed over 2,300 lives in past years.

To keep India battle ready to counter a bioterrorism attack, the National Disaster Management Authority (NDMA) has proposed a model instrument where participation of both government and private sectors is a sine qua non to defeat any such attack. In India, several nodal ministries have been earmarked for dealing with epidemics caused by bioterrorism. National Disaster Response Force (NDRF) is a specialised force constituted under MHA to deal with chemical, biological, radiological and nuclear (CBRN) attacks. It consists of 12 battalions, three each from the BSF and CRPF and two each from CISF, ITBP and SSB.

Defense Research and Development Establishment (DRDE) is the India's primary biodefense laboratory of the Defense Research and Development Organization (DRDO). It is mainly involved in the development of defense against malicious biological, chemical as well as toxicological materials.

India signed the BTWC with some reservations on January 15, 1973 and ratified the treaty a year and a half later on July 15, 1974. It was one of the few countries to have expressed its reservations, which included:

The government of India would like to reiterate in particular its understanding that the objective of the Convention is to eliminate biological and toxin weapons, thereby excluding completely the possibility of their use.

The exemption in regard to biological agents or toxins, which would be permitted for prophylactic, protective or other peaceful purposes would not, in any way, create a loophole in regard to the production or retention of biological and toxin weapons.

Any assistance which might be furnished under the terms of the Convention would be of medical or humanitarian nature and in conformity with the Charter of the United Nations.

The 'Special Chemicals, Organisms, Materials, Equipment, and Technologies' (SCOMET) guidelines of India provide stringent export product control list that include goods, technologies and services related to dual- use items.

India has also revised 'International Health Regulations' (IHR) that came into force in June 2007 which account for rapid detection and countermeasures of health emergencies.

#### Conclusion

Over the years, the weapons have been shifted from swords to malevolent biological weapons. Although, very few pathogens can be used as bioweapon, their considerable ease of production along with the immense mass casualty and civil disruption made them effective arms. Since bioterrorism attacks are unpredictable, early containment, treatment detection, and communication are crucial for appropriate response against it. New programs and systems should be designed to insure our national security. In addition, to limit the access to biological materials, laboratory biosecurity and regulations should be created and updated according to the risk assessment by the policymakers. There is heightened and urgent need of increased collaborations among the academic sector, government private industry and nations which will provide benefits far beyond protection from deliberate acts of bioterrorism.



#### **General Studies Paper- III**

**Topic:** Disaster and disaster management.

**Topic:** Role of external state and nonstate actors in creating challenges to internal security.

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## 3. NEXT GENERATION OF REFORMS IN PEACEKEEPING : NEED OF THE HOUR

#### Why in News?

India has told the United Nations Security Council (UNSC) that peacekeeping currently is in a "noman's land" and called for next generation of reforms in peacekeeping based on incentivisation, innovation and institutionalisation.

#### Introduction

The first United Nations (UN) peacekeeping mission was authorised in May 1948 and a team was deployed to the West Asia during the 1948 Arab–Israeli War. It consisted of unarmed military observers whose primary role was to monitor, report and build confidence. The earliest armed peacekeeping operation was the first UN Emergency Force deployed during the Suez crisis in 1956. The first large-scale mission having nearly 20,000 military personnel was the UN Operation in Congo launched in 1960. Since then, the UN has deployed more than 70 peacekeeping operations. Over the years, hundreds of thousands of military personnel, as well as tens of thousands of UN police and other civilians from more than 120 countries have participated in UN peacekeeping operations.

The nature of conflicts changed over the years, and peacekeeping, which originally emerged to deal with interstate conflicts, began to be applied to intrastate conflicts including civil wars. The accomplishments from past missions have raised the expectations from UN peacekeeping beyond its capacity to deliver. UN peacekeepers are now undertaking a wide variety of complex tasks, from establishing sustainable governance structures, human rights monitoring, security sector reforms, to the disarmament, demobilisation and reintegration of former combatants. Moreover, there has been a rise in civilian casualties due to inadequate resource allocation to peacekeepers on the ground. This forced the Security Council to limit the number of new peacekeeping missions and at present, there are only 14 UN peacekeeping operations deployed in 4 continents. However, this does not mean that the challenges that they face are diminishing.

#### **Peacekeeping Mission**

Peacekeeping has proven to be one of the most effective tools available to the UN to assist host countries navigate the difficult path from conflict to peace. Today's multidimensional peacekeeping operations are called upon not only to maintain peace and security, but also to facilitate political processes, protect civilians, assist in the disarmament, demobilization and reintegration of former combatants; support constitutional processes and the organization of elections, protect and promote human rights and assist in restoring the rule of law and extending legitimate state authority. UN Peacekeeping is guided by three basic principles:

- (i) Consent of the parties;
- (ii) Impartiality;
- (iii) Non-use of force except in selfdefence and defence of the mandate.

Peacekeeping has unique strengths such as legitimacy, burdensharing, deployment of troops around the world and integrating them with civilian peacekeepers to enforce various multidimensional mandates. Peacekeeping operations get their mandates from the UN Security Council; their troops and police are contributed by Members States; and they are managed by the Department of Peace Operations and supported by the Department of Operational Support at the UN Headquarters in New York. There are 14 UN peacekeeping operations currently deployed and there have been a total of 71 deployed since 1948.

However, the physical and political fragility of conflict situations limits the likelihood of success. Yet, they have attained a significant number of achievements, including a Nobel Peace Prize.

#### India and UN Peacekeeping

India has a long history of cooperation with the UN peacekeeping. One of the earliest peacekeeping missions deployed in India was the UN Military Observer Group in India and Pakistan (UNMOGIP) in 1948 itself. India has been at the vanguard of peacekeeping right from 1950 when it supplied medical personnel and troops to the UN Repatriation Commission in Korea. Since then, India has participated in 49 missions sending more than 2,08,000 troops. 156 Indians have sacrificed their lives in these peacekeeping operations, the largest sacrifice by any troop-contributing nation.

India has developed a wellrounded policy for participation in UN peacekeeping operations. It has established a training centre in Delhi under the Centre for UN Peacekeeping. This centre has provided the secretariat for **International Peacekeeping Institutes** for almost two decades. This has enhanced its image and it has begun to be accepted as an important player on the world stage. Acknowledging India's contribution, UN secretary general Antonio Guterres said that it would be an understatement to say

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that India's contribution to global peace has been remarkable.

#### **Reforms in Peacekeeping**

The UN peacekeeping forces are facing several new challenges that have surfaced due to changing in geopolitical situations. India also called for next generation of reforms in peacekeeping based on incentivisation, innovation and institutionalisation. At the current stage, peacekeeping is in a "no-man's land, between trying to keep the peace in fragile environments and trying to enforce the maintenance of peace, where there is none to keep. Therefore, reforms in UN peacekeeping are the need of the hour.

#### Institutionalisation

- An approach where all key actors, especially Troop Contributing Countries (TCCs), are associated in a consistent and predictable manner in the decision-making matrix has been now discussed for decades. However, in practice, there is not effective improvement of the cooperation between TCCs, the Security Council and the Secretariat.
- It is time to move from pursuit of activism of individual member states to collective action by this Council to institutionalise this effort.

#### Insentivisation

As of July 31, 2019, women peacekeepers constituted 6 per cent. There are 5,243 female peacekeepers, out of a total of 86,687 peacekeepers. In 26 years, India has increased the share of women by 5 per cent. At this rate, it may not be possible to meet even minimum targets. There need to be special incentives for women peacekeepers and priority deployment of all women- unit pledges. Otherwise, the targets will remain just targets.

#### Innovation

- Innovation in capacity building of peacekeepers needs to be a priority, if nations are to move away from a culture of caveats that bedevils peacekeeping into a segmented activity.
- Innovative options such as codeployment of peacekeepers from different countries engenders a genuine spirit of partnership for peace and needs to be promoted.
- Enhancing capabilities and capacities through Mobile Training Teams in large missions is a useful mechanism to harness available talent for specific common objectives.
  - Further, there is need for expansion of online initiatives to develop capacities of future commanders and managers so that they lead by example and raise awareness of UN standards of conduct among their personnel is another innovation that can be further promoted.

Other Demands India has been very vocal and at the forefront regarding reforms for peacekeeping forces. India wants a greater say in decisions pertaining to peacekeeping. From India's point of view, better training of peacekeepers is required.

- India wants that the UNSC should decide peacekeeping operations within 30 days or a maximum period of 90 days in order to avoid tragedies because of delays.
- India also wants the involvement of experts from various fields in peacekeeping in order to better deal with emerging challenges. There should also be a sound exit policy for peacekeepers.

#### **Issues and Challenges**

The biggest challenge that UN peacekeeping forces are facing today is the difference of opinion between the countries of the Global North and

South with regards to the scope and mandates of peacekeeping operations. There are inconsistencies in the positions adopted by actors on both the sides. For instance, countries of the South are demanding more aggressive peacekeeping and condemning the North for not intervening adequately in Rwanda, Sierra Leone and Congo, yet at the same time accusing them of interventionist policies. Northern countries also hesitate to engage their troops with the UN due to its deficiencies and, also refuse to finance the measures needed to improve the UN.

The countries of the North are asking for more robust peacekeeping mandates, while countries of the South fear that this may threaten their sovereignty. The peacekeepers are demanding more resources, whereas Global South fears that this would divert resources better spent on fighting poverty. The Security Council is accused of using these operations only in areas, which are geopolitically significant to them, and ignoring the rest. The Secretary-General of the UN, Antonio Guterres, launched an Action for Peacekeeping (A4P) initiative on 28 March 2018, to renew the individual and collective commitments of Member States to strengthen peacekeeping operations on the ground and resolve these conflicting issues.

#### Criticism: Peacekeeping Force

Peacekeepers also came under criticism because of their failure to protect those who are vulnerable and trust peacekeepers to protect them. For instance, peacekeepers in South Sudan failed to protect the public from attacks despite repeated calls for help while being stationed just a mile away. UN Security Council has adopted the resolution 2272 - to hold peacekeepers

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accountable for sexual abuse. The United States has introduced a new resolution to accelerate progress on peacekeeping performances, which has three critical performance priorities.

- First, the Security Council and the concerned member states need to report their performance failures in a time-bound and transparent manner.
- Second, an accountability mechanism for failure needs to be established and incentives should be given for stronger performance (suggestion for any incentive mechanism).
- Third, data is necessary in order for troops to be deployed for the right roles, and deployment should only be on the basis of training and operational readiness, and not politics.

#### **Way Forward**

India has a huge role to play when it comes to introducing reforms to peacekeeping. The Declaration of Shared Commitments on UN Peacekeeping Operations, part of the Action for Peacekeeping (A4P) initiative, has highlighted the crucial areas for reforms. For instance, improving the safety of peacekeepers, holding them accountable for their actions, strengthening protection provided by peacekeeping forces and finding political solutions to conflicts and enhancing the political impact of peacekeeping. India should take advantage of its rising global stature and should take a lead in order to make this arm of the UN more effective.

General Studies Paper- II Topic: Important International institutions, agencies and fora- their structure, mandate.

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## 4. SOUTH CHINA SEA DISPUTE AND ITS ROLE IN INTERNATIONAL POLITICS

#### Why in News?

Recently, China is back to Vietnamese waters, with an eye on the country's oil and gas. A large crane ship owned by China National Offshore Oil Corporation (CNOOC), sailed to Vietnamese exclusive economic zone (EEZ).

#### Introduction

China's maritime disputes span centuries. The fight over overlapping exclusive economic zones in the South China Sea (SCS) has an equally complex chronology of events steeped in the turmoil of Southeast Asian history.

China's actions in the SCS in recent years—including extensive island-building and base construction activities at sites that it occupies in the Spratly Islands, as well as actions by its maritime forces to assert China's claims against competing claims by regional neighbors such as the Philippines and Vietnam—have heightened concerns in the region.

In SCS, one of the world's busiest waterways, the Philippines, Vietnam, China, Brunei, Taiwan and Malaysia hold different, sometimes overlapping, territorial claims over the sea, based on various accounts of history and geography.

- Over the years, the claimants have seized control of a raft of sea features, including rocks, islands and low-tide elevations.
- China's "nine-dash line" is a geographical marker used to assert its claim. It stretches as far as 2,000 km from the Chinese mainland, reaching waters close to Indonesia and Malaysia. The Chinese government claims an enormous area under what is known as the "nine-dash line." Beijing maintains the area has been under Chinese rule since "ancient times" many disagree.
- The SCS is a confusing web of territorial claims. At least six governments say they're the rightful owner of parts of the Spratlys and the Paracels.
- The Philippines government also claims the majority of the Spratly chain, which lies off their shores. But so far, President Rodrigo Duterte has wanted warmer

relations with China, rather than conflict.

- Vietnam claims the Paracel chain and parts of the Spratlys, saying they fall under Hanoi's control. The Chinese government has repeatedly blocked Hanoi's attempts to explore for oil inside what both regard as their territory.
- Taiwan, Malaysia and Brunei all claim or control parts of the region, but either due to the smaller size of their stakes or their inability to enforce them, they seldom come into conflict over the issue.

#### **Relevance of South China Sea**

Establishing a presence in the SCS is about more than prestige and power. Several claimants are trying to take control of fishing rights and potentially much more valuable, yet unproven, oil and gas reserves deep beneath the water. The Chinese government maintains that the vast majority of any resources in the South China Sea belong to Beijing, and has disrupted attempts by Vietnam to explore its own waters off its shores.



Controlling access to the SCS would also give the holder power over one of the world's most valuable trading routes, conferring huge influence to whichever country dominates its waters. The sea hosts one-third of global shipping, worth more than \$3 trillion in 2016, according to the Center for Strategic & International Studies' (CSIS) China Power Project. That included \$874 billion of Chinese exports, as well as \$125 billion in US imports to the region.

More than 80% of trade to and from Vietnam and Indonesia passes through the sea, according to CSIS figures. It's also an important access point to the Strait of Malacca, a narrow shipping passage which gives access to the Indian Ocean and trade with countries beyond. However, it's not just resources and trading routes that are motivating the U.S. to challenge China's dominance in the region. If the South China Sea were effectively closed to American ships and aircraft by an increasingly powerful Chinese military, it would limit U.S. effectiveness as a world power.

#### Role of Different Stakeholders

#### **The United States**

The US has wide-ranging security commitments in East Asia, and is allied with several of the countries bordering the SCS, such as the Philippines, Singapore and Vietnam. Although the US does not officially align with any of the claimants, it has conducted freedom of navigation operations, designed to challenge what Washington considers excessive claims and grant the free passage of commercial ships in its waters.

China claims the South China Sea as its own sea, almost all of it, including the oil and gas resources hidden beneath. These are resources Beijing desperately needs nowadays, as America is cutting off its Middle-East supplies. And China has been doing whatever it takes to assert its ownership rights on these resources. Like the building of artificial islands, and the sailing its vessels in disputed waters. China has also established a new city on one of the islands – Sansha on Woody Island – in turn leading to an increased Chinese tourism. China has repeatedly criticised the US for acting "provocatively", while it has started to defend its claims in a more assertive way in recent years.

#### **Southeast Asian Nations**

Southeast Asian nations have traditionally rejected looking for a bilateral solution with China, the region's main economic and military power. Despite this, one year after the landmark ruling against China's territorial claims, Philippine President Rodrigo Duterte agreed to solve the dispute with China through bilateral talks.

Similarly, Vietnam, the most outspoken critic of China, has softened its stance. In 2018, the government said it would be willing to hold talks with China to resolve disputes in the area "in accordance with international law".

Association of Southeast Asian Nations (ASEAN) has been working with china on an official code of conduct to avoid clashes in the disputed waters. A binding agreement has been discussed for years to little avail but in August 2018 it was revealed all the parties had agreed on a single draft negotiating text.

#### Russia

Russia's involvement in the South China Sea has historically been marginal. Russia has been low-key in the South China Sea because it simply doesn't have much at stake. Little of Russia's energy resources travel through the waters of the South China Sea. Russia does not yet have the reach or need to participate in regional squabbles, and does not have any major economic interests to protect there. Awareness in Russia about the South China Sea is very low, and rarely a matter of presidential politics. The interest in the disputes that does exist comes from Russia's close ties to both China and Vietnam. Russia is a longtime arms supplier to both countries and has been central to Vietnam's naval modernization, especially with the Vietnamese navy's six Kilo-class submarines capable of carrying Klub missiles. That is in addition to the corvettes, frigates, fighter jets, and missile defense systems that provide Vietnam the capability for retaliation and possibly deterrence against China.

One of the great issues at stake in the South China Sea is freedom of navigation and the interpretation of this principle. Further, in the long run, Russia may find itself more deeply

#### **International Arbitration**

Bringing territorial disputes to an international legal body presents another means of conflict mitigation. The International Court of Justice and the International Tribunal for the Law of the Sea are two forums where claimants can file submissions for settlement. In July 2013, a UN tribunal was convened at The Hague to discuss an arbitration case filed by the Philippine government contesting the legality of China's territorial claims in the South China Sea. The court ruled in favor of the Philippines in July 2016. The tribunal found that China's "nine-dash line" had no legal basis for its claims to historic rights to resources in the South China Sea and that none of the land features met the requirements of an exclusive economic zone for China. The Chinese foreign ministry dismissed the court's award, saying it had no binding force. Alternatively, an outside organization or mediator could also be called upon to resolve the disagreement, yet the prospect for success in these cases is slim given China's likely continued opposition.

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involved in the South China Sea, as long as its Asia policy is a full-scale shift and not just a minor change in its bilateral engagements.

#### Recent Developments Surrounding the South China Sea

A look at recent developments in the South China Sea, where China is pitted against smaller neighbors in multiple territorial disputes over islands, coral reefs and lagoons. The waters are a major shipping route for global commerce and rich in fish and possible oil and gas reserves.

Recently, a U.S. Navy destroyer sailed near the Paracel Islands in a challenge to China's claim to the waters around them. The operation by the USS Wayne E. Meyer has demonstrated that the waters are beyond what China can claim as its internal waters or territorial seas under international law.

China and the Philippines are moving forward with a delicate proposal to look into joint offshore oil and gas exploration in and near the disputed South China Sea.

About 1,500 Philippine military personnel opened two weeks of combat drills on land, sea and air that will include mock interdictions and amphibious landings on two island provinces fronting the South China Sea. Air and sea interdiction drills will be held in a training area in Palawan province, while amphibious landings will take place in another training site in Zambales province, two regions fronting the South China Sea. China has frowned on military drills in the disputed waters, especially those staged by the U.S. with its allies.

China and Malaysia agreed to establish a consultation mechanism to discuss and resolve their differences over maritime issues. However, China and the Philippines have a similar body that has met several times but has yet to resolve any major territorial issues.

#### India's South China Sea Policy

India's back-to-back moves to boost relations with Japan and Russia, particularly in security matters, appear to indicate it wants a bigger naval role in the contested South China Sea to counter a rising China. However for three reasons, which unlikely to abandon its policy of non-intervention in the security affairs of Southeast Asia and SCS.

- First, India is not party to the maritime territorial disputes in the region and is unlikely to want to meddle in a matter that does not directly concern it.
- Second, Indian policymakers know Beijing operates from a position of strength, where it has physical control over critical islands in the SCS. Possession of these features gives Beijing the ability to exert strategic authority over the disputed territory, regardless of the rights and interests of other regional states.
- Third, and perhaps most importantly, India is keen to preserve its "Wuhan consensus" with China. It hopes Beijing will respect India's sphere of influence in the Indian Ocean in the same way that Delhi will respect Beijing's in Southeast Asia.

Even if China has not acted in good faith recently – calling for an informal meeting of the UN Security Council to discuss the Kashmir issue – the Indian government is unwilling to violate its goodwill pact with Beijing. India is not impervious to the threat China poses to trade flows in the region, or to the significant challenges to Indian energy and strategic interests. Access to the major waterways in Southeast Asia is an important consideration for Indian policymakers, as is the need to build capacity in member states of the ASEAN. Both are central to New Delhi's developing Indo-Pacific vision.

Notwithstanding the government of India's efforts to implement the "Act East" policy, and a general improvement in connectivity initiatives and economic diplomacy, India has yet to muster the political gumption to take a strong stand against Chinese aggression in the regional commons.

#### Conclusion

China has demonstrated that other avenues exist for inching its way forward in the South China Sea and expanding its de facto control. Dragging out formal talks and buying off its neighbors are just two possible tactics. Four years after Russia annexed Crimea from Ukraine, Moscow has and continues to employ similar tactics to tighten its hold on and increasingly fortify the Black Sea peninsula. Similarly, the idea that China will maintain its presence on numerous features in the South China Sea and increase its military presence in a show of control cannot easily be denied, particularly as the culmination of China's efforts to date have significantly augmented its military presence in the South China Sea and drastically upgraded Beijing's peacetime and wartime position.

#### **General Studies Paper- II**

**Topic:** India and its neighborhood-relations.

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

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## 5. INSOLVENCY AND BANKRUPTCY CODE : JOURNEY SO FAR

#### Why in News?

Recently, Ministry of Finance has urged banks to treat the Insolvency and Bankruptcy Code (IBC) as the last resort for resolution of stressed assets and approach the National Company Law Tribunal (NCLT) only when other options have been explored.

#### Introduction

As of 2015, insolvency resolution in India took 4.3 years on an average. This is higher when compared to other countries such as United Kingdom (1 year) and United States of America (1.5 years). These delays are caused due to time taken to resolve cases in courts and confusion due to a lack of clarity about the current bankruptcy framework. Besides, the structure of the bankruptcy and insolvency process was varied and multi-layered. Being covered by multiple laws, with different fora for adjudication, the process was wrought with delay and other inadequacies.

In order smoothening to insolvency process, the government of India had enacted IBC in 2016. It has given stakeholders the power to take a defaulter to the National Company Law Tribunal (NCLT) by way of application to initiate Corporate Insolvency Resolution Process (CIRP). Further, it provides for a time-bound process to resolve insolvency. When a default in repayment occurs, creditors gain control over debtor's assets and must take decisions to resolve insolvency within a 180-day period. To ensure an uninterrupted resolution process, the Code also provides immunity to debtors from resolution claims of creditors during this period. The Code also consolidates provisions of the current legislative

framework to form a common forum for debtors and creditors of all classes to resolve insolvency. Further, it has been amended thrice, including 2019 amendments by the government since its enactment into law in 2016.

As per the recent amendment, IBC seeks to ensure timely admission of insolvency cases and completion within the newly set deadline of 330 days (it was 270 days earlier). The resolution plan under the corporate insolvency resolution process will also be binding on the Centre, State and local authorities.

#### National Company Law Appellate Tribunal

National Company Law Appellate Tribunal (NCLAT) was constituted under Section 410 of the Companies Act, 2013 for hearing appeals against the orders of National Company Law Tribunal(s) (NCLT), with effect from 1st June, 2016. NCLAT is also the Appellate Tribunal for hearing appeals against the orders passed by NCLT(s) under Section 61 of the Insolvency and Bankruptcy Code, 2016 (IBC), with effect from 1st December, 2016. NCLAT is also the Appellate Tribunal for hearing appeals against the orders passed by Insolvency and Bankruptcy Board of India under Section 202 and Section 211 of IBC. NCLAT is also the Appellate Tribunal to hear and dispose of appeals against any direction issued or decision made or order passed by the Competition Commission of India (CCI) – as per the amendment brought to Section 410 of the Companies Act, 2013 by Section 172 of the Finance Act, 2017, with effect from 26th May, 2017.

#### Journey so Far

The early harvest through the IBC process has been extremely satisfactory. It has changed the debtor - creditor relationship. The creditor no longer chases the debtor. In fact, it is otherwise. Upon constitution of the NCLT and the implementation of IBC its functionality had revealed the need for improvements in the law. Two

legislative interventions since then have taken place.

The NCLT has become a trusted forum of high credibility. Those who drive the companies to insolvency, exit from management. The selection of new management has been an honest and transparent process. There has been no political or governmental interference in the cases. The recoveries of monies parked in insolvent companies has taken place through three methods : firstly, after the introduction of Section 29(A) such companies are paying up in anticipation of not crossing red line and being referred to NCLT. As a result, the banks have started receiving monies from the potential debtors who pay in anticipation of the default. The defaulters know well that once they get into IBC they will surely be out of management because of Section 29(A). Secondly, once a petition of the creditor is filed before the NCLT many debtors have been paying at the pre-admission stage so that the declaration of insolvency does not take place. Thirdly, many major insolvency cases have already been resolved and many are on the way of resolving. Those which cannot be resolved move towards liquidation and the banks are receiving the liquidation value.

The functioning of NCLT and the Tribunal has led to a large number of cases being filed. The NCLT is over-crowded its capacity is now being further enhanced. Realizing the urgency, the Supreme Court has pronounced several judgements expeditiously, laying down the law on the new legislative provisions. The law declared by the Supreme Court will go a long way in interpretation and clarifying the ambiguity, if any. This will expedite the process further in coming days.



#### **Recoveries made by the IBC**

The Insolvency and Bankruptcy Code was primarily enacted to help banks recover a higher amount of bad loans than they had earlier. Also, the idea was to quicken the process. Bad loans are largely loans that haven't been repaid for a period of 90 days or more. The question is how well the insolvency legislation has done on this front. Since it started operating and until 30 June, financial creditors (primarily banks whose loans had been defaulted on by corporates) had filed claims worth Rs. 2.53 trillion under IBC. The total recovery has been at RS. 1.08 trillion. This means a rate of recovery of 42.8%. On the face of it, IBC's recovery rate of 42.8% sounds quite good. In 2017-18, the rate of recovery from non-IBC methods was around 12.4%. In 2012-2013, the rate of recovery was 22%. It has come down since then. Now a rate of recovery of 42.8% sounds much better than 12.8%. The biggest recovery for banks was when Bamnipal Steel, a unit of Tata Steel, bought Bhushan Steel. Bhushan Steel had defaulted on loans worth Rs. 56,022 crore. Bamnipal Steel paid Rs. 35,571 crore for the company. The rate of recovery was 63.5% of the defaulted loans. The rate of recovery falls to around 36.9% from 42.8%, if we ignore Bamnipal Steel taking over Bhushan Steel. The rate of recovery in other cases hasn't been as high.

Further, according to IBC, the entire process needed to be completed in 270 days. As of March, the average time taken in cases that were resolved, typically, with the company that has defaulted on a loan being sold to another company, was 324 days. This was longer than the 270-day deadline, but much less than the 4.3 years it used to take before IBC was implemented. However, in July, the government has extended the deadline for the corporate insolvency resolution process to 330 days.

### Slow path to recovery

Of the 2,162 cases referred to the corporate insolvency resolution process, only 120 have been closed by resolution and 475 by liquidation.

Status of corporate insolvency resolution process\*



#### Unresolved Cases

Until 30 June, of the 2,162 cases that have been referred to the corporate insolvency resolution process (CIRP), only 120 have seen resolution plans; 1,292 are still under CIRP. Hence, of the 870 cases that are out of CIRP, only 13.8% have seen resolution plans. This is very low. As many as 475 cases have been closed by liquidation. Of these, liquidation has happened in only 11 cases and the recovery is next to nothing.

#### An Analysis

The central promise of IBC was a timebound resolution of debt that has gone bad, which, when unresolved for long periods, has a corrosive effect on lenders, investors, liquidity and sentiment. Resolution of insolvent companies allows lenders to recover their dues partly and, also where possible, salvage parts of the company's business after debt obligations have been met. The process also allows a company to make a fresh start, with a new set of promoters and a healthier balance sheet. But this promise now appears to be under threat, with the NCLT infrastructure proving woefully inadequate for the quantum of cases flooding the system. The lack of established legal precedents, which will only build up over time, also makes litigation under the IBC framework elaborate and time-consuming.

High number of liquidations is a cause for major worry as it violates IBC's principal objective of resolving bankruptcy. Moreover, 1292 accumulated and unresolved cases redflag the tendency to go back to the days of longer legal delays. If this delaying and accumulating trend persists then the purpose of enacting IBC is going to get defeated in near future.

The Reserve Bank of India had flagged IBC as its preferred solution for bank bad debts, by pushing flagship cases such as Essar Steel, Bhushan Steel and Bhushan Power and Steel into the IBC process in 2017. Further, on February 12, 2018, the apex bank recommended a mandatory push to IBC for any corporate defaulter, after banks had spent 6 months trying to find a resolution, but this circular, was set aside by the Supreme Court in April 2019. However, in the intervening months, many Indian bankers had generally adopted RBI's stance of pushing every bad debt/debt default case into the IBC process. The IBC process was meant to serve as a deterrent, incentivising promoters to pay up or reach a deal with lenders, rather than end up in the NCLT, with the risk of losing their companies.



Further, operationalisation of IBC, till now, has been spoiled by myriad factors ranging from frivolous challenges posed by operational creditors and promoters to shortage of judges in tribunals. There has been allegation of "gaming" the system as well. As a result, an important piece of legislation like IBC, which was expected to usher in a new era of ease of doing business, may fall into the trap of implementation failure.

#### **Way Forward**

IBC as a structural reform has demonstrable impact, which is reflected in behavioural change

among debtors, creditors and other stakeholders. It has been also hailed as an important instrument to tackle problem of non-performing the assets (NPAs) in the banking sector. Effective implementation of the IBC is expected to tackle the problem of bad loans on the financial creditors' side on the one hand and the problem of indebted companies on the other. This is supposed to be one of the crucial economic reforms that would enhance ease of doing business. Therefore, proactive training or onboarding of judges, lawyers and other intermediaries will be necessary for effective implementation of the code.

Further, there is need for setting up more tribunals in different parts of the country to handle the greaterthan-expected volume of cases and IBC must consider that there are distinct advantages if the existing management is allowed to keep running the company such as knowledge, information and expertise.

#### General Studies Paper- III

**Topic:** Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

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## 6. ANTIMICROBIAL RESISTANCE : A BIG THREAT TO PUBLIC HEALTH

#### Why in News?

India has ioined the Global Antimicrobial Resistance (AMR) Research and Development (R&D) Hub as a new member. It would help India to expand the global partnership working to address challenges and improve coordination and collaboration in global AMR R&D to 16 countries, the European Commission, two philanthropic foundations and four international organisations as observers. With India as a member, the Hub now represents more than half the world's population.

#### Introduction

The widespread use of antibiotics over the last 75 years has dramatically reduced illness and death due to infectious diseases. Unfortunately, their indiscriminate use has come at a grave cost, that of antimicrobial resistance (AMR)—the ability of microbes to adapt to drugs that act against them and become resistant to their effects in fighting disease, thus creating 'superbugs'. Antimicrobial resistance is a serious global challenge. Every continent and country faces the menace of antibiotic resistant "super bugs," though the extent and the severity of the problem varies. The alarming rate at which bacteria are becoming resistant to existing antibiotics has led the World Health Organization (WHO) to identify AMR as one of the top-10 threats to global health. As per estimates, 700,000 persons die every year worldwide due to AMR and inaction in containing this menace is likely to cause, by 2050, over 10 million deaths every year, more than those caused by cancers and road accidents combined.

In recent years, drug resistance has manifested itself in the emergence of superbugs that have enzymes such as the New Delhi metallo beta lactamase-I that makes them resistant to a large number of broad range antibiotics. And the aggressive and tenacious fungus Candida auris that required special cleaning of a room in Mount Sinai Hospital, where a person infected with the fungus had been admitted for 90 days. Mount Sinai, it was reported, had to rip out ceiling tiles in a bid to get rid of the Candida infestation in the room. The threat of AMR is also increasing in India that has some of the highest antibiotic resistance rates among bacteria that commonly cause infections. The country is also the largest consumer of antibiotics in the world. In India, the consumption of antibiotics has increased by 103 per cent from 2000 to 2015, the highest in low and middle-income countries, according to a study. The most glaring red flag in India came some years ago when doctors in Mumbai claimed to have encountered some tuberculosis cases that were totally drug-resistant (TDR). Though that claim did not get official sanction from health agencies such as the WHO, it did lead to a new classification of XDR (extreme drugresistant) TB.

## What is Antimicrobial Resistance?

Antimicrobial resistance occurs when microorganisms such as bacteria, viruses, fungi and parasites change in ways that render the medications used to cure the infections they cause

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ineffective. When the microorganisms become resistant to most antimicrobials they are often referred to as "superbugs". This is a major concern because a resistant infection may kill, can spread to others, and imposes huge costs to individuals and society. Antimicrobial resistance is the broader term for resistance in different types of microorganisms and encompasses resistance to antibacterial, antiviral, antiparasitic and antifungal drugs.

Antibiotic resistance develops when bacteria adapt and grow in the presence of antibiotics. The development of resistance is linked to how often antibiotics are used. Because many antibiotics belong to the same class of medicines, resistance to one specific antibiotic agent can lead to resistance to a whole related class. Resistance that develops in one organism or location can also spread rapidly and unpredictably, though, for instance, exchange of genetic material between different bacteria, and can affect antibiotic treatment of a wide range of infections and diseases. Drug-resistant bacteria can circulate in populations of human beings and animals, through food, water and the environment, and transmission is influenced by trade, travel and both human and animal migration. Resistant bacteria can be found in food animals and food products destined for consumption by humans.

The word antibiotic means "against life." Antibiotics are medicines that help stop infections caused by bacteria. They do this by killing the bacteria or by keeping them from copying themselves or reproducing. But most people use the term when they're talking about medicine that is meant to kill bacteria.

## Difference between Antibiotic and Antimicrobial Resistance

Antibiotic resistance occurs when bacteria change in response to the use of antibiotics used to treat bacterial infections (such as urinary tract

## WHAT'S AMR?

Resistance of a micro-organism to an antibiotic that was originally effective in treating infections caused by it

## Why India needs to curb antibiotic overuse

India's bacterial disease burden is highest in the world

Large population suffers from diseases like diabetes, heart ailments and cancer, making them prone to infections

 40% children are malnourished and at risk of infections

 More and more drug-resistant bacteria are being identified



infections, pneumonia, bloodstream infections) making them ineffective.

Antimicrobial resistance is a broader term, encompassing resistance to drugs that treat infections caused by other microbes as well, such as parasites (e.g. malaria or helminths), viruses (e.g. HIV) and fungi (e.g. Candida).

#### Scope of the Problem

Antibiotic resistance is rising to dangerously high levels in all parts of the world. New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases. A growing list of infections - such as pneumonia, tuberculosis, blood poisoning, gonorrhoea, and foodborne diseases are becoming harder and sometimes impossible, to treat as antibiotics become less effective. Where antibiotics can be bought for human or animal use without a prescription, the emergence and spread of resistance is made worse.

Similarly, in countries without standard treatment guidelines, antibiotics are often over-prescribed by health workers and veterinarians and over-used by the public. The United Nations (UN) has warned that more and more common diseases, including respiratory tract infections, sexually transmitted infections and urinary tract infections are becoming untreatable and lifesaving medical procedures are becoming much riskier.

Resistance develops more rapidly through the misuse and overuse of antimicrobial medicines. Antibiotic use for human health is reported to be increasing substantially. Surveys in a wide range of countries show that many patients believe that antibiotics will cure viral infections that cause coughs, colds and fever. Antibiotics are needed to treat sick animals but are also widely used in healthy animals to prevent disease and, in many countries, to promote growth through mass administration to herds. Antimicrobial agents are commonly used in plant agriculture and commercial fish and seafood farming. The potential impact of antimicrobials in the environment is also of concern to many.

Antimicrobial resistance can affect all patients and families. Some of the commonest childhood diseases in developing countries – malaria, pneumonia, otherrespiratory



infections, and dysentery–can no longer be cured with many older antibiotics or medicines. In lowerincome countries, effective and accessible antibiotics are crucial for saving the lives of children who have those diseases, as well as other conditions such as bacterial blood infections. In all countries, some routine surgical operations and cancer chemotherapy will become less safe without effective antibiotics to protect against infections.

#### Global Initiatives to Combat AMR

Tackling antibiotic resistance is a high priority for global community and taken several steps to curb the AMR. Some of the important initiatives are given below:

**Global Action Plan on Antimicrobial Resistance:** It was endorsed at the World Health Assembly in May 2015. It aims to ensure prevention and treatment of infectious diseases with safe and effective medicines. The five strategic objectives of the plan are:

- To improve awareness and understanding of antimicrobial resistance through effective communication, education and training
- To strengthen the knowledge and evidence base through surveillance and research.
- III. To reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures.
- IV. To optimize the use of antimicrobial medicines in human and animal health.
- V. To develop the economic case for sustainable investment that takes account of the needs of all countries and to increase investment in new medicines, diagnostic tools, vaccines and other interventions.

This action plan underscores the need for an effective "one health" approach involving coordination among numerous international sectors and actors, including human and veterinary medicine, agriculture, finance, environment, and wellinformed consumers. The action plan recognizes and addresses both the variable resources nations have to combat antimicrobial resistance and the economic factors that discourage the development of replacement products by the pharmaceutical industry.

The Global Antimicrobial Resistance Surveillance System (GLASS): The GLASS supports a standardized approach to the collection, analysis and sharing of data related to antimicrobial resistance at a global level to inform decision-making, drive local, national and regional action.

Global Antibiotic Research and Development Partnership (GARDP): It is a joint initiative of WHO and Drugs for Neglected Diseases initiative (DNDi). It encourages research and development through public-private partnerships. By 2023, the partnership aims to develop and deliver up to four new treatments, through improvement of existing antibiotics and acceleration of the entry of new antibiotic drugs.

Interagency Coordination Group on Antimicrobial Resistance (IACG): The United Nations Secretary-General has established IACG to improve coordination between international organizations and to ensure effective global action against this threat to health security. It comprises high level representatives of relevant UN agencies, other international organizations, and individual experts across different sectors.

**Global AMR R&D Hub:** It was launched in May 2018. The hub has a provisional work plan (2018-2021), under which it proposes to develop



a dynamic dashboard, establish operational activities and operational procedures and engage experts in ad-hoc Expert Advisory Groups to understand the range of R&D incentives and gaps in the incentive toolbox.

#### India and AMR

India took a major step by announcing a National Action Plan (NAP) on AMR in April 2017 for a period of five years (2017-2021), which, in addition to the 5 Global Action Plan priorities, included sixth pillar for "strengthening а India's leadership on AMR" among overall strategies. It highlighted the problem of antimicrobial resistance and calls for a rapid standardization of guidelines regarding antibiotic use, limiting the use of antibiotics as overthe-counter medications, banning or restricting the use of antibiotics as growth promoters in animal livestock, and pharmacovigilance including prescription audits inclusive of antibiotic usage - in the hospital and community.

Recently, India has joined the Global AMR R&D Hub as a new member. By partnering with the Global AMR R&D Hub, India looks forward to working with all partners to leverage their existing capabilities, resources and collectively focus on new R&D intervention to address drug resistant infections. Today, the emergence and spread of antimicrobial resistance continues

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unabated around the world. Given the important and interdependent human, animal and environmental dimensions of antimicrobial resistance, India considers it reasonable to explore issues of antimicrobial resistance through the lens of 'One Health' approach which should be supported by long-term commitments from all stakeholders.

#### **Way Forward**

Despite proposals and initiatives over

many years to combat antimicrobial resistance, progress has been slow. Still, AMR is one of the greatest threats we are facing as a global community. Therefore, in order to combat this threat countries should prioritise national action plans to scale-up financing and capacitybuilding efforts, put in place stronger regulatory systems and support awareness programs for responsible and prudent use of antimicrobials by professionals in human, animal and plant health and invest in ambitious research and development for new technologies to combat antimicrobial resistance.

General Studies Paper- III Topic: Inclusive growth and issues arising from it.

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## 7. HIGHER EDUCATION IN INDIA : PROSPECTS AND CHALLENGES

#### Why in News?

Recently, the Human Resource Development Ministry has awarded the status of Institute of Eminence (IoE) to the IIT-Madras, the IIT-Kharagpur, Delhi University, Benares Hindu University and the University of Hyderabad. Till date, HRD Ministry has awarded IoE status to 16 institutions.

#### Introduction

Higher education is a critical contributor sustainable livelihoods to and economic development of the nation. Higher education also plays a large and equally important role in improving human well being, and developing India as envisioned in the Constitution - a democratic, just, socially conscious, self-aware, cultured and humane nation, with liberty, equality, fraternal spirit and justice for all. Higher education aims to serve as a hub for developing ideas and innovations that enlighten individuals and help propel the country forward socially, culturally, artistically, scientifically, technologically and conomically.

As India moves towards becoming a true knowledge society and economy - and in view of the forthcoming fourth industrial revolution, where India aims to lead and where an increasing proportion of employment opportunities will consist of skilled jobs of a creative and multidisciplinary nature – more and more young Indians are aspiring to higher education. Accordingly, the higher education system in India must, at the earliest, be readjusted, revamped, and reenergised to fulfil these important and noble aspirations of the people.

#### India's Higher Education System

India's higher education sector has witnessed a tremendous increase in the number of universities/ level Institutions University & Colleges since independence. As a result, today, India's 70 million student population is a force to reckon with. Among them are potential thought leaders - researchers and academics - positioned at the helm of knowledge creation. Among them are entrepreneurs and executives of the future, industry-ready and highly sought after. India's higher education system is the world's third largest in terms of students, next to China and the United States. In future, India will be one of the largest education hubs.

Government of India through Ministry of Human Resource Development (MHRD) under the Department of Higher Education shapes the policies related to higher education. The University Grants Commission (UGC) a statutory body established in 1956 through Parliament enacted law modeled on the UGC of United kingdom is responsible for coordination, evaluation and maintaining standards of higher education in India. UGC funded through MHRD is responsible for establishing central universities across India and for recognizing Deemed to be Universities run by privately funded trusts and Universities established by the state governments across India. UGC has established statutory Councils to promote, provide grants, set standards and establish professional education in different areas.

#### Challenges

Fragmentation of the Higher Education System: India has over 800 universities and approximately 40,000 colleges, reflecting the overall severe fragmentation and small size of higher education institutions (HEIs) currently in the country. This fragmentation of the system leads directly to severe suboptimality on various fronts: resource utilisation, the range and number of programmes and disciplines, the range and number of faculty, and the ability to carry out high-quality multidisciplinary research.



Too much early Specialisation and Streaming of Students into Disciplines: India's higher education has developed rigid boundaries of disciplines and fields, along with a narrow view of what constitutes education. As already mentioned, its most harmful expression is in the enormous number of mono-field institutions that have been developed, most notably in the professional and vocational fields.

Lack of Access: Access in higher education has significantly improved in the past few decades, but is still not sufficient to reach all our young citizens; especially in socio - economically disadvantaged areas equity in and quality of education still remain a big challenge.

Lack of Teacher and Institutional Autonomy: The lack of teacher autonomy has led to a severe lack of faculty motivation and scope for innovation. In order for faculty members and institutional leaders to innovate and explore in their teaching, research and service, they must have the individual autonomy that allows them to do so.

Inadequate Mechanisms for Career Management: A further reason for lack of novel initiatives from faculty and institutional leaders, besides the lack of autonomy, is the lack of a suitable structure for career management of faculty and of institutional leaders. The system of selection, tenure, promotion, salary increases and other recognition and vertical mobility of faculty and institutional leaders is, at the current time, not based on merit but tends to be either seniority based or arbitrary. This has had the negative effect of severely disincentivising quality and innovation at all levels.

Lack of Research: The lack of research at most universities and colleges, and the lack of transparent and competitive peer reviewed

research funding across disciplines. The separation in higher education between teaching institutions and research institutions postindependence has caused much harm, as most universities and colleges in the country today conduct very little research.

Suboptimal Governance and Leadership of Higher Education Institutions: Governance and leadership of HEIs are, at the current time, deeply influenced and controlled by external bodies and individuals. Often these external influences have vested political and/or commercial interests in the HEIs.

**Regulation System:** A regulatory system allowing fake colleges to thrive while constraining excellent,

innovative institutions. There are many fake colleges in existence that run with impunity, while excellent colleges and universities feel constrained academically, administratively and financially. Regulation has been too heavy handed for decades. It has been the key contributor to the diffused sense of autonomy and accountbility in the system, while on the other hand it has been unable to stop commercialization of education.

#### Improving the System of Higher Education

 There is a need to implement innovative and transformational approach form primary to higher education level to make Indian educational system globally more relevant and competitive.

#### **Draft National Education Policy 2019**

The Committee for Draft National Education Policy (Chair: Dr. K. Kasturirangan) submitted its report on May 31, 2019. The report proposes an education policy, which seeks to address the challenges of: (i) access, (ii) equity, (iii) quality, (iv) affordability, and (v) accountability faced by the current education system. Key observations and recommendations of the draft Policy include:

**Institutional Restructuring & Consolidation:** A new vision and architecture for higher education has been envisaged in the policy with large, well-resourced, vibrant multidisciplinary institutions.

**Towards High Quality Liberal Education:** The policy envisages an imaginative and broadbased liberal undergraduate education with rigorous specialization in chosen disciplines and fields.

**Optimal Learning Environments & Student Support:** The policy envisions a joyful, rigorous and responsive curriculum, engaging and effective pedagogy, and caring support to optimize learning and the overall development of students.

**Energised, Engaged & Capable Faculty:** The most important factor for the success of higher education institutions is the quality and engagement of its faculty: this policy puts faculty back into the heart of higher education.

**Empowered Governance & Autonomy in Higher Education Governance:** This policy sees independent, self-governed higher education institutions with capable and ethical leadership as a driver of educational change.

**Higher Education Governance & Regulation:** This policy aims to set up effective, enabling and responsive regulation to encourage excellence and public- spiritedness in higher education.

**Integrating Professional Education into Higher Education:** This policy aims to build a holistic approach to the preparation of professionals, by ensuring broad-based competencies, an understanding of the social- human context, a strong ethical compass, in addition to the highest-quality professional capacities.

**National Research Foundation:** This policy has a strong emphasis on catalyzing and energizing research and innovation across the country in all academic disciplines.

Rashtriya Shiksha Aayog: The Indian education system needs inspiring leadership which will also ensure excellence of execution.

Financing Education: This Policy is committed to raising educational investment - there is no better society's future.

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- Higher educational institutes need to improve quality and reputation.
- There should be a good infrastructure of colleges and universities which may attract the students.
- Government must promote collaboration between Indian higher education institutes and top international institutes and also generates linkage between national research laboratories and research centers of top institutions for better quality and collaborative research.
- There is a need to focus on the graduate students by providing them such courses in which they can achieve excellence, gain deeper knowledge of subject so that they will get jobs after recruitment in the companies which would reduce unnecessary rush to the higher education.
- Universities and colleges in both public private must be away from the political affiliations.
- Favouritism, money making process should be out of education system etc.
- There should be a multidisciplinary approach in higher education so that students knowledge may not be restricted only upto his own subjects

### Government Initiative to Promote Higher Education

The government of India has initiated major reforms in the education sector to improve the quality and access to education. Aimed at expanding access to quality education, new premier higher education institutions have been opened across the country, marking the highest ever such expansion in the history after Independence.



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- SWAYAM MOOCs Portal: The portal has courses by the best teachers in the country and offers video lectures, e-reading material, discussion forum and assessment system - resulting in award of credits to the successful learners.
- Unnat Bharat Abhiyan (UBA): It is a new initiative to make use the knowledge base in the higher educational institutions for plugging technology gaps in the rural areas. In this year, 750 institutions are being selected on challenge mode. This is expected to enrich rural India by way of customising existing technology as per local needs and also by improving the implementation of existing government schemes.
- Global Initiative of Academic Networks (GIAN): It was launched in 2015 to garner best international knowledge and experience into the country's higher education so as to enable Indian students & faculty to interact with best academic and industry experts from across the world.
- Institutions of Eminence: Government has embarked on building 20 institutions of higher learning - 10 public and 10 private institutions as "Institutions of Eminence" (IoE), so that they are related among the global best institutions.

- The Uchchtar Avishkar Yojana (UAY): It has been launched to promote industry specific needbased research so as to keep up the competitiveness of Indian industry in the global market.
- Smart India Hackathon: It was launched to promote innovation in the students by encouraging out of the box solutions for common problems faced by the society at large.
- Higher Education Financing Agency (HEFA): It has been approved by the Cabinet for creation of a fund with government equity of Rs. 1000 crores, to give a big push for building up robust higher educational institutions. The HEFA would finance the academic and research infrastructure projects through a 10 year loan. It is expected to spend Rs. 1,00,000 crore in next 5 years, for creation of high quality infrastructure in premier education institutions.
- Siksha Rashtriya Uchchatar • Abhiyan (RUSA): It scheme has been given extension by cabinet recently to provide more assistance for infrastructure to universities and colleges, creation of model degree colleges, cluster universitites, upgradation of autonomous colleges and vocationalisation of higher education.



#### Conclusion

In view of the requirements of the 21<sup>st</sup> century, the aim of a quality university or college education must be to develop good, well rounded, and creative individuals. It must enable an individual to study one or more specialised areas of interest at a deeper level, while at the same time building character, ethical and Constitutional values, intellectual curiosity, spirit of service, and 21<sup>st</sup> century capabilities across a range of disciplines including the sciences, social sciences, arts, humanities, as well as professional, technical, and vocational crafts. Quality higher education must enable personal accomplishment and enlightenment, constructive public engagement, and productive contribution to society.

In order for it to attain these critical end goals, higher education must possess some fundamental attributes. It must provide students



with broad based multidisciplinary education and 21st century skills, while developing specialised knowledge with true disciplinary rigour. The future workplace will demand critical thinking, communication, problem solving, creativity, and multidisciplinary capability. Single-skill and singlediscipline jobs are likely to become automated over time. Therefore, there will be a great need to focus on multidisciplinary and 21st century competencies for future work roles - these are indeed the capabilities that will separate humans from robots. In particular, education must empower workers of the future to become enterprising and creative innovators.

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#### **General Studies Paper- II**

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

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# Peeking and Mapping the Universe through Telescopes

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Q 1. "Astronomy and related fields are at the forefront of science and technology; answering fundamental questions and driving innovation." Discuss it in the context of recent developments in the field of astronomy.

#### Hints:

- The universe is pouring out information on its extent, structure, composition, variety of objects, their relative motions, their temperatures, time variations, the electric and magnetic fields in the various regions, the physico-chemical and biological evolutionary chains and a host of other details, in the form of a variety of particulate and electromagnetic, radiations, neutrino.
- Perhaps exotic particles yet unidentified, and has left it to the ingenuity of man to record these radiations and come out with a consistent, meaningful understanding of the origin, the fundamental constituents and the forces behind the vast range of phenomena witnessed.
- The investment in astronomical telescopes, whether in space or on the ground, has to be justified by the scientific return and in selecting new facilities it is fundamentally the science which drives the decision. The value of the observations made by telescopes based both on the ground and in space can be measured not just by the scientific results in understanding the near and far universe, but also in the inspiration that these images and discoveries provide.
- A wealth of examples show how the study of astronomy contributes to technology, economy and society by constantly pushing for instruments, processes and software that are beyond our current capabilities. As far as India is concerned, India is marching ahead in astronomy research aided by ground based, balloon borne and satellite facilities. The future of astronomy in India is bright and the next decade promises a substantial contribution coming from India.

### **Bioterrorism : A Global Challenge**

- Q 2. What are biological weapons? Discuss why there is urgent need of increased collaboration among the global fraternity to prevent the development weapons. Hints:
- Biological weapons are complex systems that disseminate disease-causing organisms or toxins to harm or kill humans, animals or plants. They generally consist of two parts – a weaponized agent and a delivery mechanism.
- There is plenty of consensus that the use of biological weapons by non-state actors remains a tangible reality. Non-state actors have not hesitated to employ weapons of mass destruction (WMDs) when they were able to access such weapons and criminal elements are more than willing to assist terror organizations in attaining materials.
- In addition to these incidents there are plenty of terrorism experts who conclude that sufficient evidence exists to believe that terrorist are pursuing WMD capabilities. Terrorist organizations from IS to Al-Qaeda continue to actively seek WMD capabilities, including biological weapons.
- Over the years, the weapons have been shifted from swords to malevolent biological weapons. Although, very few pathogens can be used as bioweapon, their considerable ease of production along with the immense mass casualty and civil disruption made them effective arms. Since bioterrorism attacks are unpredictable, early detection, containment, treatment and communication are crucial for appropriate response against it.

## Next Generation of Reforms in Peacekeeping : Need of the Hour

Q 3. "Reforms are the need of the hour as UN peacekeeping today faces several new challenges that have surfaced due to changing geopolitical situations." Discuss.

#### Hints:

 The UN peacekeeping forces are facing several new challenges that have surfaced due to changing in



geopolitical situations. The biggest challenge that UN peacekeeping forces are facing today is the difference of opinion between the countries of the Global North and South with regards to the scope and mandates of peacekeeping operations. There are inconsistencies in the positions adopted by actors on both the sides.

- Peacekeepers also came under criticism because of their failure to protect those who are vulnerable and trust peacekeepers to protect them. For instance, peacekeepers in South Sudan failed to protect the public from attacks despite repeated calls for help while being stationed just a mile away.
- India also called for next generation of reforms in peacekeeping based on incentivisation, innovation and institutionalisation. At the current stage, peacekeeping is in a "no-man's land, between trying to keep the peace in fragile environments and trying to enforce the maintenance of peace, where there is none to keep. Therefore, reforms in UN peacekeeping are the need of the hour.

## South China Sea Dispute and Its Role in International Politics

## Q 4. What is South China Sea dispute? Discuss the India's South China Sea policy.

Hints:

- China's maritime disputes span centuries. The fight over overlapping exclusive economic zones in the South China Sea (SCS) has an equally complex chronology of events steeped in the turmoil of Southeast Asian history.
- In SCS, one of the world's busiest waterways, the Philippines, Vietnam, China, Brunei, Taiwan and Malaysia hold different, sometimes overlapping, territorial claims over the sea, based on various accounts of history and geography.
- India's back-to-back moves to boost relations with Japan and Russia, particularly in security matters, appear to indicate it wants a bigger naval role in the contested South China Sea to counter a rising China. However for three reasons, which unlikely to abandon its policy of non-intervention in the security affairs of Southeast Asia and SCS.
- Even if China has not acted in good faith recently calling for an informal meeting of the UN Security Council to discuss the Kashmir issue – the Indian government is unwilling to violate its goodwill pact with Beijing.

Notwithstanding the government of India's efforts to implement the "Act East" policy, and a general improvement in connectivity initiatives and economic diplomacy, India has yet to muster the political gumption to take a strong stand against Chinese aggression in the regional commons.

## Insolvency and Bankruptcy Code : Journey So Far

Q 5. "IBC as a structural reform has demonstrable impact, which is reflected in behavioural change among debtors." Critically discuss.

Hints:

- The early harvest through the IBC process has been extremely satisfactory. It has changed the debtor creditor relationship. The creditor no longer chases the debtor.
- The NCLT has become a trusted forum of high credibility. Those who drive the companies to insolvency, exit from management. The selection of new management has been an honest and transparent process. There has been no political or governmental interference in the cases. The recoveries of monies parked in insolvent companies has taken place through three methods.
- The central promise of IBC was a time-bound resolution of debt that has gone bad, which, when unresolved for long periods, has a corrosive effect on lenders, investors, liquidity and sentiment.
- The lack of established legal precedents, which will only build up over time, also makes litigation under the IBC framework elaborate and time-consuming.
- Further, operationalisation of IBC, till now, has been spoiled by myriad factors ranging from frivolous challenges posed by operational creditors and promoters to shortage of judges in tribunals. There has been allegation of "gaming" the system as well. As a result, an important piece of legislation like IBC, which was expected to usher in a new era of ease of doing business, may fall into the trap of implementation failure.
- There is need for setting up more tribunals in different parts of the country to handle the greater-thanexpected volume of cases and IBC must consider that there are distinct advantages if the existing management is allowed to keep running the company such as knowledge, information and expertise.



### Antimicrobial Resistance : A Big Threat to Public Health

Q 6. What do you understand by antimicrobial resistances (AMR)? Discuss why AMR is becoming a serious global challenge.

Hints:

- Antimicrobial resistance occurs when microorganisms such as bacteria, viruses, fungi and parasites change in ways that render the medications used to cure the infections they cause ineffective. When the microorganisms become resistant to most antimicrobials they are often referred to as "superbugs".
- Antibiotic resistance develops when bacteria adapt and grow in the presence of antibiotics. The development of resistance is linked to how often antibiotics are used.
- Resistance that develops in one organism or location can also spread rapidly and unpredictably, though, for instance, exchange of genetic material between different bacteria, and can affect antibiotic treatment of a wide range of infections and diseases.
- Drug-resistant bacteria can circulate in populations of human beings and animals, through food, water and the environment, and transmission is influenced by trade, travel and both human and animal migration. Resistant bacteria can be found in food animals and food products destined for consumption by humans.
- The United Nations (UN) has warned that more and more common diseases, including respiratory tract infections, sexually transmitted infections and urinary tract infections are becoming untreatable and lifesaving medical procedures are becoming much riskier.

### Higher Education in India : Prospects and Challenges

Q 7. Discuss the challenges and prospects of higher education in India.

Hints:

- India's higher education system is the world's third largest in terms of students, next to China and the United States. In future, India will be one of the largest education hubs.
- India's higher education sector has witnessed a tremendous increase in the number of universities/ University level Institutions & Colleges since independence. As a result, today, India's 70 million student population is a force to reckon with. Among them are potential thought leaders – researchers and academics – positioned at the helm of knowledge creation. Among them are entrepreneurs and executives of the future, industry-ready and highly sought after.
- India's higher education has developed rigid boundaries of disciplines and fields, along with a narrow view of what constitutes education.
- In view of the requirements of the 21st century, the aim of a quality university or college education must be to develop good, well rounded, and creative individuals. It must enable an individual to study one or more specialised areas of interest at a deeper level, while at the same time building character, ethical and Constitutional values, intellectual curiosity, spirit of service, and 21<sup>st</sup> century capabilities across a range of disciplines including the sciences, social sciences, arts, humanities, as well as professional, technical, and vocational crafts.

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| 3.1.1 This makes the Bombay<br>Blood types a very special and<br>rare category of people                                                                                     | <b>3.2</b> Globally, the hh blood<br>type has an incidence of<br>one in four million                                                 | ★<br>3.2.1 This blood type is more common in<br>South Asia; in India, one in 7,600 to 10,000<br>are born with this type than anywhere else<br>because of inbreeding and close community | Marriages                                                               | is confused with the O group<br>4.2.1 The difference is that the | O group has Antigen H, while<br>the hh group does not | <b>4.3</b> If anyone lacks Antigen H, it does not mean he or she suffers from poor immunity or may be more prone to diseases             | 4.3.1 Their counts for haemoglobin,<br>platelets, white blood cells and red<br>blood cells are similar to the count of<br>others based on their health index                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul> <li>Foople with A type blood<br/>can accept blood from A type or<br/>0 type only and they can donate, in<br/>turn, to those with A or AB types</li> </ul> | Those with B type can receive<br>m B or O types and can donate<br>to those with B or AB types                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <ul> <li>The hh type (Bombay type people) can accept only from other hh type and also can receive only from the hh types</li> </ul>                                          |                                                                                                                                      | Why it is<br>Rare?                                                                                                                                                                      | <b>4.1</b> To test for hh blood, an<br>Antigen H blood test is required |                                                                  | Testing                                               | 4.3.2 Because of rarity, however, they do face problems during                                                                           | blood transfusion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Limitations                                                                                                                                                    | Those with AB type blood <b>5</b><br>can receive from any one fro<br>and donate to other AB                                         |
| <ul> <li>2.3.2 For instance, in the AB blood group,</li> <li>both antigens A and B are found, blood group A</li> <li>will have A antigens; B will have B antigens</li> </ul> | 2.3.3 In hh, there is no A or B antigens                                                                                             | Introduction                                                                                                                                                                            |                                                                         | Bombay Blood                                                     |                                                       | Further, this group is generally<br>not stored in blood banks, mainly<br>because it is rare and the shelf<br>life of blood is 35-42 days | o the study, there<br>D patients with this<br>tered across India<br>five donors available<br>emergency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | rast, hin blood<br>mate their blood<br>blood types                                                                                                             | 5.4 Finally those with O type<br>blood can receive only from O,<br>but can donate their blood to A,<br>B, O or AB- universal donors |
| 2.3.1 The Bombay blood group, also called<br>hh, is deficient in expressing antigen H,<br>meaning the RBC has no antigen H                                                   | <ul> <li>2.3 Each red blood cell has antigen over its surface, which helps deter-</li> <li>mine which group it belongs to</li> </ul> | 2.2 The rare, Bombay blood group was first discovered in Mumbai (then Bombay) in 1952 by Dr. Y M Bhende                                                                                 | 2.1. The four most<br>common blood group<br>are A, B, AB and O          | Why in News?                                                     | Let Demand for the 'Bombay blood                      | group', rare blood type has coincidentally<br>spiked at hospitals in Mumbai,<br>but supply has been scarce                               | Sig According the are more than 35 blood group regime to according the area according to a second se | Solution to ABO to ABO                                                                                                                                         |                                                                                                                                     |

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| <ul> <li>3.2.1 The 69 km pipeline will transport fuel from the Barauni refinery in Bihar to Amlekhgunj in South-east Nepal</li> </ul>           | 3.3 It is the first-ever cross-<br>der petroleum product pipeline<br>in the South Asia region                                             | 2.4 Every year, the pipeline will<br>arry two million metric tonne of<br>lean petroleum products at an<br>affordable price to Nepal | <b>3.5</b> It will help to enhance<br>the energy security of the<br>region and substantially cut<br>down on transit costs | India and Nepal, which share a<br>Lkm border, have close religious<br>nd cultural bonds and tens of<br>usands of Nepalis work in India | The India-Nepal Treaty of Peace<br>I Friendship of 1950 forms the<br>ock of the special relations that<br>vist between India and Nepal | er the provisions of this Treaty,<br>i citizens have enjoyed certain<br>es in India, availing facilities and<br>ities at par with Indian citizens |                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>B.2</b> Construction of the pipeline<br>was undertaken by Indian Oil<br>Corporation Ltd (IOCL) with Nepal<br>Oil Corporation Ltd (NOCL)      | por                                                                                                                                       | ey Highlights                                                                                                                       | As of now, tankers carry<br>oleum products from India to<br>al as part of an arrangement<br>which is in place since 1973  | 1,755<br>and<br>thou                                                                                                                   | - Nepal ations                                                                                                                         | 4.2.1 Und<br>the Nepal<br>advantage<br>ina opportun                                                                                               | Pal occupies special significance<br>ndia's foreign policy because of<br>sographic, historical, cultural and<br>nomic ties that span centuries                   |
| 3.1.1 The project was put back<br>on the agenda during Prime Minister<br>Narendra Modi's visit to Kathmandu<br>in 2014                          | 3.1 The Motihari-Amlekhgunj<br>oil pipeline project was first<br>proposed in 1996                                                         | A A                                                                                                                                 | mlekhgunj                                                                                                                 |                                                                                                                                        | China-Nepal                                                                                                                            | 4.4 Nepal also acts as a natu<br>buffer between India and Ch                                                                                      | 4.3 Ne<br>in In<br>the ge<br>eco                                                                                                                                 |
| <b>2.3</b> Both were seen as means by<br>Nepal to find an alternative to its<br>dependency on India and came on<br>the back of tensions in 2015 | Background                                                                                                                                |                                                                                                                                     | Motihari-A<br>Oil Pipelli                                                                                                 | 5.3 Nepal is the founding<br>member of the AllB. Nepal also holds ←                                                                    | the observer status in the Shanghai<br>Cooperation Organization<br>ina has emerged as the                                              | : source of foreign direct<br>westment in Nepal                                                                                                   | <ul> <li>China has provided 3 billion</li> <li>Yuan for Nepal's reconstruction</li> <li>to be used in the jointly selected</li> <li>25 major projects</li> </ul> |
| <b>2.2</b> There were also plans to<br>link Nepal and China through<br>an energy pipeline running<br>through the Himalayas                      | The development comes against<br>the backdrop of recent plans for a<br>rail link between Nepal and China<br>cutting through the Himalayas | <b>1.2</b> The move seeks to bind<br>Kathmandu closer to New Delhi,<br>economically and strategically                               | Why in News?                                                                                                              | Lindia and Nepal has jointly<br>inaugurated the Motihari-Amlekhgunj<br>petroleum product pipeline                                      |                                                                                                                                        | arges                                                                                                                                             |                                                                                                                                                                  |





## SEMEN MCO'S WHEELED EXTRAMATORY ANSWERS (Based on Brain Boosters)

### National Animal Disease Control Programme

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- Q1. Consider the following statements in respect of 'National Animal Disease Control Programme':
  - It aims to control the Foot & Mouth Disease (FMD) and Brucellosis by 2025 and eradicate these by 2030.
  - 2. Both diseases are zoonotic diseases that are endemic in most parts of the country.

Which of the statements given above is/are correct?

|--|

c) Both 1 and 2 d) Neither 1 nor 2

#### Answer: (a)

**Explanation: Statement 1 is correct.** Prime Minister Narendra Modi has launched the National Animal Disease Control Programme (NACDP) to control and eradicate the Foot & Mouth Disease (FMD) and Brucellosis amongst the livestock. It aims to control the livestock diseases by 2025 and eradicate these by 2030.

**Statement 2 is not correct.** FMD is a highly infectious viral disease of cattle, swine, sheep, goats and other cloven-hooved ruminants. But brucellosis is a zoonotic disease that is endemic in most parts of the country.

### **Imported Inflation**

- Q2. With reference to the 'imported inflation', consider the following statements:
  - 1. When, the general price level rise in a country because of the rise in prices of imported commodities, inflation is termed as imported.
  - 2. Inflation may also rise because of depreciation of the domestic currency.

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.** When the general price level rises in a country because of the rise in prices of imported commodities, inflation is termed as imported. However, it is not always necessary that only rise in the price of a traded commodity in the international market fuels imported inflation. Inflation may also rise because of depreciation of the domestic currency.

### **Bombay Blood Group**

- Q3. Consider the following statements in respect of 'bombay blood group (hh type)':
  - The hh type (Bombay type people) can accept only from other hh type and also can receive only from the hh types.
  - 2. This blood group can donate their blood to O and ABO blood types.

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: (a)

**Explanation: Statement 1 is correct.** The Bombay blood group, also called hh, is deficient in expressing antigen H, meaning the RBC has no antigen H. The hh type (Bombay type people) can accept only from other hh type and also can receive only from the hh types. This makes the Bombay Blood types a very special and rare category of people.

**Statement 2 is not correct.** Thehh blood group can donate their blood to ABO blood types only.

#### **Hepatitis B**

- Q4. Consider the following statements in respect of 'Hepatisis B':
  - 1. Along with Bangladesh, Bhutan and Nepal, India has successfully controlled hepatitis B in the World Health Organization's Southeast Asia region.



- 2. Hepatitis B is bacterial infection that attacks the liver and can cause both acute and chronic disease.
- 3. It is most commonly transmitted from mother to child during birth and delivery.

Which of the statements given above is/are correct?

| a) 1 and 2 only | b) | 3 only |
|-----------------|----|--------|
|-----------------|----|--------|

|  | c) | 1 and 3 only | d) | 2 only |
|--|----|--------------|----|--------|
|--|----|--------------|----|--------|

Answer: (b)

**Explanation: Statement 1 is not correct.** Bangladesh, Bhutan, Nepal and Thailand became the first four countries in the World Health Organization's Southeast Asia region to have successfully controlled hepatitis B.

**Statement 2 is not correct.** Hepatitis B is a viral infection that attacks the liver and can cause both acute and chronic disease.

**Statement 3 is correct.** The virus is most commonly transmitted from mother to child during birth and delivery, as well as through contact with blood or other body fluids.

### **Structure of VIP's Security**

- Q5. With reference to the structure of VIP's security', consider the following statements:
  - 1. Ministry of Home Affairs and intelligence agencies (Intelligence Bureau and the Research and Analysis Wing) decide the structure of VIP security in India.
  - 2. The Special Protection Group (SPG) is a force raised specifically for the protection of the PM, former PMs and their immediate family.

Which of the statements given above is/are correct?

| An | <b>swer:</b> (b) |    |                 |
|----|------------------|----|-----------------|
| c) | Both 1 and 2     | d) | Neither 1 nor 2 |
| a) | 1 only           | b) | 2 only          |

**Explanation: Statement 1 is not correct.** The Ministry of Home Affairs takes the decision based on inputs from intelligence agencies, which include the Intelligence Bureau and the Research and Analysis Wing.

**Statement 2 is correct.** The Special Protection Group (SPG) is a force raised specifically for the protection of the PM, former PMs and their immediate family. The SPG is a force raised specifically for the protection of the PM, former PMs and their immediate family. The SPG was raised in 1985 in the wake of the killing of PM Indira Gandhi in 1984.

### Motihari-Amlekhgunj Oil Pipeline Project

Q6. Consider the following statements in respect of 'Motihari-Amlekhgunj Oil Pipeline Project':

- 1. The pipeline will transport fuel from the Barauni refinery in Bihar to Amlekhgunj in South-east Nepal.
- 2. It is India's second cross-border petroleum product pipeline in the South Asia region.

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: (b)

**Explanation: Statement 1 is correct.** India and Nepal has jointly inaugurated the Motihari-Amlekhgunj petroleum product pipeline. Every year, the pipeline will carry two million metric tonne of clean petroleum products at an affordable price to Nepal.

**Statement 2 is not correct.** It is the first-ever crossborder petroleum product pipeline in the South Asia region.

### Differential Carbon Tax

#### **Q7.** Consider the following statements:

- 1. At present, in global South, per capita carbon emissions are much smaller in comparison to the countries in the global North but the price being paid it to changing climate is huge.
- 2. Emissions trading, as set out in the 'Paris agreement', allow countries to sell excess units to countries that are over their targets.

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: (a)

**Explanation: Statement 1 is correct.** At present its per capita carbon emissions are much smaller in comparison to the countries in the global North but the price being paid it to changing climate is huge.

**Statement 2 is not correct.** Emissions trading, as set out in the Kyoto Protocol, allows countries that have emission units to spare - emissions permitted them but not used - to sell this excess capacity to countries that are over their targets.

# DAVI JUNUPORALYANNAL JOANO FOR PRIMINS

1. Who has become India's first female military diplomat to be posted in any of the Indian missions abroad?

-Wing Commander Anjali Singh

2. Which international organisation has decided to translate and publish an anthology of the writings of Guru Nanak Dev in world languages to mark his 550<sup>th</sup> birth anniversary?

> -The United Nations Educational, Scientific and Cultural Organization (UNESCO)

3. Which country has become the 79<sup>th</sup> country to join the International Solar Alliance (ISA)?

-Saint Vincent and Grenadines

4. Who has become the first Indian, fastest ever to finish in a world record time of 50 hours, 24 minutes 'Enduroman triathlon'?

-Mayank Vaid (based in Hong Kong)

5. Which institute has been set up by as a national consortium on clean coal research and development at Indian Institute of Science (IISc)?

> -National Centre for Clean Coal Research and Development (NCCCR&D)

6. Which Indian documentary film based on the struggle of a farmer in a remote village of Uttarakhand, has been nominated for the Oscars?

-Moti Bagh

7. Which state government has launched 'Mukhya Mantri Seva Sankalp helpline number 1100', to provide timely help to citizens of the state?

-Himachal Pradesh

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# SIDVEN PRACTICE QUESTIONS FOR MAINS DXAM

- Q1. What is 'Universal Civil Code'? What would such a Code seek to achieve and what have been the arguments for and against it? Discuss.
- Q2. "India should be concerning itself with encouraging innovations in alternate fuels and promoting startups in the energy sector. " Discuss it in the context of recent attack on Saudi's oil company.
- Q3. "India must secure its interests in dealing with ASEAN and RCEP". Critically discuss.
- Q4. What is 'vaccine hesitancy'? Discuss how overcoming 'vaccine hesitancy' can reduce the global spread of infections.
- Q5. "Majority in parliament gains legitimacy through deliberation but in a majoritarian parliament, numbers trump every other moral consideration." Discuss.
- Q6. What is Jammu and Kashmir's Public Safety Act? What constitutional safeguards are guaranteed to a person so detained? Discuss.
- Q7. "Focusing on health, education of women will bring down population, increase work participation in India." Comment.

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## 1. Jan Soochna Portal-2019

The government of Rajasthan has launched, first-ever public the information (Jan Soochna portal Portal), provide information to about government authorities and departments suo motu to the public in the true spirit of the Right To Information Act (RTI Act).

#### **Key Highlights**

The portal would ensure compliance with Section 4(2) of the RTI Act mandating the public authorities to disclose information in the public domain.

The portal would eventually turn out to be an effective medium for "digital dialogue" with the people as well as a strong instrument for ensuring transparency in governance.

The state government will set up information kiosks in village panchayats and self-service 'e-mitra' centres in the towns to enable the people to access the information useful for them. Initially, the information pertaining to 13 government departments such as the number of beneficiaries of schemes, works undertaken in different areas, land records and social security pensions — will be available on the portal.

#### **About RTI**

Right to Information Act, 2005 mandates timely response to citizen



requests for government information. The basic object of the RTI Act is to empower the citizens, promote transparency and accountability in the working of the government, contain corruption and make our democracy work for the people in real sense. The Act is a big step towards making the citizens informed about the activities of the government.

#### 2. New Policy for Scientific Social Responsibility

India is going to be possibly the first country in the world to implement a Scientific Social Responsibility (SSR) Policy on the lines of Corporate Social Responsibility (CSR) to encourage science and technology (S&T) institutions and individual scientists in the country to proactively engage in science outreach activities to connect science with the society. A draft of the new policy has been made available by the Department of Science and Technology (DST) on its website for public comments.

#### **Key Highlights**

 The policy aims to harness latent potential of the scientific community for strengthening linkages between science and society, and for making S&T ecosystem vibrant.

- It is aimed at developing a mechanism for ensuring access to scientific knowledge, transferring benefits of science to meet societal needs, promoting collaborations to identify problems and develop solutions.
- Under the proposed policy, individual scientists or knowledge workers will be required to devote at least 10 person-days of SSR per year for exchanging scientific knowledge to society.
- It also recognises the need to provide incentives for outreach

activities with necessary budgetary support. It has also been proposed to give credit to knowledge workers/scientists for individual SSR activities in their annual performance appraisal and evaluation. No institution would be allowed to outsource or subcontract their SSR activities and projects.

The draft defines SSR as "the ethical obligation of knowledge workers in all fields of science and technology to voluntarily contribute their knowledge and resources to the widest spectrum of stakeholders in society, in a spirit of service and conscious reciprocity".



## 3. India Iodine Survey 2018-19

In collaboration with the All India Institute of Medical Sciences (AIIMS), Association for Indian Coalition for the Control of Iodine Deficiency Disorders (ICCIDD), Nutrition International, a global nutrition organisation has conducted a country-wide study – India Iodine Survey 2018-19 to estimate the iodine status of the population and assess the extent to which Indian households have access to adequately iodised salt.

According to World Health Organisation (WHO), guidelines, a daily iodine intake of 150 microgram is required to prevent iodine deficiency disorders and this can be achieved by using adequately iodised salt, i.e. salt containing a minimum of 15 parts per million (ppm) of iodine.

#### **Key Findings**

Jammu and Kashmir, Manipur, Mizoram and Nagaland are frontrunner states with more than 99 per cent of households having access to adequately iodised salt. It also revealed that 13 out 36 states have already achieved Universal Salt lodisation (USI) with more than 90 per cent of households having access to adequately iodised salt.

The survey found that 76.3 per cent of Indian households consume

adequately iodised salt, meaning salt with more than or equal to 15 ppm of iodine.

The results signify the progress made by India towards Universal Salt lodisation (USI) which has a target of reaching 90 per cent of the population with adequately iodised salt.

The results also convey the need to step up efforts to ensure all households consume adequately iodised salt while sustaining the gains achieved over the years to protect everyone from the risk of iodine deficiency disorders.

## 4. National Genomic Grid

The government of India is planning to set up a National Genomic Grid, to take cancer research to the next level and make treatment viable for people of different economic classes. It will study genomic data of cancer patients from India.

#### Key Highlights

The grid to be formed will be in line with the National Cancer Tissue Biobank (NCTB) set up at the Indian Indian Institute of Technology, Madras and will collect samples from cancer patients to study genomic factors influencing cancer and identifying the right treatment modalities for the Indian population.

The genomic samples will help researches to have India-specific studies on cancers. The government is planning to set up the National Genomic Grid in the same style with pan-India collection centres by bringing all cancer treatment institutions on board. The grid will have four parts, with the country divided into East, West, North and South.

#### **Other Facts**

The first set of 350 genomic data of stomach and breast cancer patients developed from the 3,000 samples at NCTB will be released by the end of October. The government is on a mission to achieve the target of one doctor for every 1,000 people, a standard ratio set by the World Health Organisation (WHO), by 2022, against the current ratio of 1/1,400. Also, the government is also planning to increased the number of MBBS seats in the country from 42,000 to one lakh. ■

## 5. Atal Ranking of Institutions on Innovation Achievements 2020

The government of India has launched the Atal Ranking of Institutions on Innovation Achievements (ARIIA) 2020. ARIIA is an initiative of Ministry of Human Resource Development (MHRD) to systematically rank all major educational institutions and universities on indicators related to promotion of "Innovation and Entrepreneurship Development" amongst their students and faculties.

The India innovation ranking aims at setting direction for higher education institutions (HEIs) towards streamlining and establishing a strong startup ecosystem in campus and region. Measuring innovation and startup ecosystem based on input, process, output and outcome based parameters.

Focusing on both quantity and quality aspects of startup eco-system available at institute. Also measure the impact created by these innovations



and startups in society and market. Aiming at uplifting India's position in the Global Innovation Index from 57<sup>th</sup> to top 30 in a time period of 5 Years.

#### Background

In India, innovation is still not the epicenter of education. In order to achieve the cultural and attitudinal

6. Salmonella Bacteria

shift and to ensure that 'Innovation and Startup' culture is the primary fulcrum of our higher education system, a policy framework and guidelines are the need of this hour.

#### The United States Food and Drugs Administration (USFDA) has discovered Salmonella bacteria in three lots of MDH sambhar masala.

#### What is Salmonella?

Salmonella is a group of bacteria that can cause food-borne illnesses known as salmonellosis. Individuals who develop salmonellosis may show symptoms such as nausea, diarrhoea, fever and abdominal cramps 12-72 hours after contracting the infection. Usually, the illness lasts for 4-7 days and most people recover without treatment. In some cases the diarrhoea is severe and there is risk of it spreading from the intestines to the bloodstream and to other parts of the body. In such cases, the infection (enteric fever) may result in death if the infected individual is not treated with antibiotics on time.

#### Concern

The World Health Organisation (WHO) identifies Salmonella as one of four key global causes of diarrhoeal diseases. Salmonella bacteria are widely distributed in domestic and wild animals. They are prevalent in food animals such as poultry, pigs and cattle, as well as in pets, including cats, dogs, birds and turtles. Salmonella can pass through the entire food chain from animal feed, primary production, and all the way to households or foodservice establishments and institutions.

Salmonellosis in humans is generally contracted through the consumption of contaminated food of animal origin (mainly eggs, meat, poultry and milk), although other foods, including green vegetables contaminated by manure, have been implicated in its transmission. Personto-person transmission can also occur through the faecal-oral route.

India has skipped a meeting of the Eurasian Economic Union (EAEU), which was organised by the Shanghai Cooperation Organisation (SCO) at Xi'an in China. India has been a member of the SCO since 2017.

The entire event was organized to discuss and deliberate upon China's Belt and Road Initiative (BRI), because of which India, despite being present in the SCO summit, decided to skip



this meeting. The forum promoted the revival of the ancient Great Silk Road in Eurasia in a new, modern format.

7. Eurasian Economic Union

#### The EAEU and BRI

In November 2018, Chinese Premier Li Keqiang and Russian Prime Minister Dmitry Medvedev met in Beijing for the 23<sup>rd</sup> annual meeting. Both agreed synergize the BRI and the EAEU.

## BRI and India's Opposition

The BRI is a mammoth infrastructure project unveiled by China in 2017, which plans to connect the plans to connect the three continents of Asia, Europe and Africa. In May 2017, India strongly opposed the BRI and the Ministry of External Affairs said: "No country can accept a project that ignores its core concerns on sovereignty and territorial integrity."

#### **About EAEU**

The EAEU is an international organization for regional economic integration. It has international legal personality and is established by the 'Treaty on the Eurasian Economic Union.' The EAEU provides for free movement of goods, services, capital pursues coordinated, and labor, harmonized and single policy in the sectors determined by the treaty and international agreements within the Union.

The member states of the EAEU are the Armenia, Belarus, Kazakhstan, the Kyrgyz Republic and the Russian Federation.



## 1. Climate Summit for Enhanced Action: A Financial Perspective from India

Ministry of Finance has brought out a discussion Paper titled "Climate Summit for Enhanced Action: A Financial Perspective from India". It examines various issues on climate finance comprehensively - finance in climate treaties, climate finance delivery- a reality check, the 3 essential 'S's of climate finance- scope, scale and speed, India's climate actions despite economic imperatives, emergence of new "priorities", "ambitions" and "externalities"– new asks and Indian response to climate emergency: some considerations.

The discussion paper makes an analysis of the post Paris Agreement developments and indicates that more actions need to be taken to meet objectives of the Agreement, which in turn depends on the momentum of international climate finance, in terms of new and additionalclimate finance, technological and capacity building support. In essence, the 3 essential "S" s of climate finance has not been clearly translated into reality.

#### **Key Highlights**

India's Nationally Determined Contribution (NDC) is on a "best effort" basis, keeping in mind the developmental imperatives of the country.So, finance holds a key for all its actions. At this juncture, the provision of technology and finance is uncertain; India can only aspire to implement the already promised climate actions and do equally well or better in comparison to economies with similar levels of development.

The year 2023 is the time when the global community will do first global stocktake under the Paris Agreement. This is the time, when India will be better placed to consider a mid-term assessment of its actions and suitably recalibrate through re-examination and improvement. For the present, India may only be in a position to elaborate or clarify its post 2020 climate actions already pledged in its NDC.

## 2. Curriculum for Life Skills

The government of India has launched the 'Curriculum for Life Skills' (Jeevan Kaushal) designed by University Grants Commission (UGC).

#### **Key Highlights**

The curriculum is designed to impart and strengthen the knowledge, skills and dispositions believed to be the best requisites of the current Industry and thereby empower the talent inherent in each learner. Life skills like communication skill, interpersonal skill, time management, problem solving ability, decision making capacity, leadership ability and integrity play a crucial role in boosting the employability of the students.

Life skills (Jeevan Kaushal) curriculum cover the set of human talents acquired by an individual via classroom learning or life experience that can help them to deal with problems encountered in day to day life. This includes the core skills each individual must possess internally as well as externally for the betterment of self and the society as a whole. Adoption of life skills is the key to success and quality in life.

#### Why?

In India, there is an unprecedented demand for quality higher education for producing employable, exceptionally performing graduates qualified with skills, knowledge and ethics essential for leading a rewarding life.

The problem of prevalent obsession with earning marks in different examinations. Such examination-driven education encourages narrow and selective reading and rote learning, which ultimately leads to deficit in actual learning.



## 3. India's Second Multi Modal Terminal in Jharkhand

Prime Minister Narendra Modi has dedicated to the nation India's second riverine multi modal terminal (MMT) built at Sahibganj in Jharkhand. This is the second of the three multi modal terminals being constructed on river Ganga under Jal Marg Vikas Project (JMVP). Earlier, in November, 2018 the Prime Minister had inaugurated the MMT at Varanasi.

#### **Benefits**

It will open up industries of Jharkhand and Bihar to the global market and provide Indo-Nepal cargo connectivity through waterways route.

It will play an important role in transportation of domestic coal from the local mines in Rajmahal area to various thermal power plants located along National Waterway-1 (NW-1). Other than coal, stone chips, fertilisers, cement and sugar are other commodities expected to be transported through the terminal. The multi-modal terminal will also help to create direct employment of about 600 people and indirect employment of about 3000 people in the region.

The convergence of Road-Rail-River transport at Sahibganj through the new multi-modal terminal will connect this part of the hinterland to Kolkata, Haldia and further to the Bay of Bengal. Also, Sahibganj will get connected to North-East States through Bangladesh by river-sea route.

#### Background

The MMTs are being built as part of the JMVP that aims to develop the stretch of River Ganga between Varanasi to Haldia for navigation of large vessels upto 1500-2000 tonnes weight, by maintaining a drought of 2-3 metres in this stretch of the river and setting up other systems required for safe navigation. The objective is to promote inland waterways as a cheaper and more environment friendly means of transport, especially for cargo movement. Inland Waterways Authority of India (IWAI) is the project Implementing Agency.

## 4. 'ANGAN'- International Conference on Energy Efficiency in Building Sector

An international conference Augmenting Nature by Green Affordable New-habitat (ANGAN) focussed on energy efficiency in building sector was organised by the Bureau of Energy Efficiency (BEE) in collaboration with GIZ under the Indo German Technical Cooperation in New Delhi, India.

#### **Key Highlights**

Speakers, delegates, experts and policy makers across 16 countries participated and discussed various alternative options and technologies in the field of design and construction of energy efficient commercial as well as residential buildings.

It is estimated that an investment of Rs. 2000 billion in building energy efficiency activities would lead to a cumulative savings of 388 billion units of electricity for the next ten years with payback of about 2 years.

The formidable challenge of providing adequate energy of desired quality to the consumers at reasonable costs, improving the efficiency in high energy consumption sectors like buildings have become important component of integrated energy policy. Due to lack of awareness and knowledge about latest technologies, financial assistance, suppliers and purchase of energy efficient equipment, etc., efforts on energy efficiency and conservation in this sector have been moderate and therefore require greater push. Apart from energy savings, the emphasis was also given to other resources like water and other materials that can be saved in building sector.

#### About BEE

The BEE is a statutory body under the Ministry of Power. It assists in developing policies and strategies with the primary objective of reducing the energy intensity of the Indian economy. BEE coordinates with designated consumers, designated agencies, and other organizations to identify and utilize the existing resources and infrastructure, in performing the functions assigned to it under the Energy Conservation Act.

## 5. Maritime Communication Services in India

Union Minister for Communications, Electronics & Information Technology and Law & Justice has launched the maritime communication services at Mumbai. The maritime connectivity will enable high-end support to those in sea

by providing access to voice, data and video services while traveling on sailing vessels, cruise liners, ships in India, using satellite technology. In December 2018, the government of India announced the licenses for In-flight and Maritime



Communications (IFMC) that allows voice and internet services while flying over the Indian skies and sailing in Indian waters, both for international and Indian aircrafts and vessels.

#### **Key Highlights**

Nelco, India's leading Very Small Aperture Terminal (VSAT) solutions provider is the first Indian company that will now provide quality broadband services to the maritime sector. Nelco through global partnerships, infrastructure including transponder capacity on satellite of Indian Space Research Organization and a comprehensive service portfolio will help energy, cargo and cruise vessels by enhancing operational efficiency, improving crew welfare and enabling customer

services. The IFMC licence has not only enabled connectivity for on-board users on ships but also brings operational efficiencies for shipping companies which were less evolved until now. The IFMC license is a key initiative of the Telecom Ministry, a move to liberalise satellite communication services in India.

Only the authorized IFMC service provider, can provide wireless voice or data or both type of services on ships within Indian territorial waters and on aircraft within or above India or Indian territorial waters. Territorial waters are 12 nautical miles from baseline of the coast and beyond that is the Exclusive Economic Zone upto 200 nautical miles (1 nautical mile is 1.852 Kms.).

## 6. Delhi Declaration

The Conference of Parties 14 (COP 14) of the United Nations Convention to Combat Desertification (UNCCD) recently concluded with the adoption of 'Delhi Declaration'. The 12-point Delhi Declaration agreed to by the parties at the conclusion of Conference raises ambitious targets with a people's first approach to land restoration.

Among the main points are promoting projects to prevent land degradation at local, national and regional levels; promote projects to prevent drought and erosion and to make barren land cultivable; plan to prevent drought, so that land degradation can be prevented; creating green jobs by promoting technology and investment in collaboration with all stakeholders; need to work towards preventing land degradation taking forward 'Paris Agreement'; implementing UN Ecosystem Restoration (2021-2030) program on behalf of all countries; to further programs initiated by African countries to prevent land degradation; peace forest imitiative benefits accepted; appeal to make local governments more accountable to prevent land degradation and make right to land transparent; to make local governments more accountable for maintaining natural resources and ecosystem; COP 14 member countries appreciate India's efforts and PM Modi's efforts to achieve the major goal of land restoration and increase south-south cooperation were praised.

The framework used for reporting action will be improved to ensure it captures key issues, such as gender equality, drought response and the influence of consumption and production patterns and flows on land degradation.

Through the 'Delhi Declaration', ministers expressed support for new initiatives or coalitions aiming to improve human health and well-being, the health of ecosystems, and to advance peace and security.

## 7. Indian Railways signed MoU with CII for Facilitation of Green Initiatives

Indian Railways (IRs) have undertaken some major green initiatives as part of India's contribution towards mitigation of global warming and combating climate change. To carry forward this green initiative, an MoU was signed between Ministry of Railways and Confederation of Indian Industries (CII) for facilitation of green initiatives in Indian Railways.

The objectives of the MoU are:

- Energy efficiency in manufacturing facilities and railway workshops. Greening of railway properties.
- Demonstrative pilots of 'net-zero energy buildings/ railway stations'.
- Capacity and skill development by continuous sharing of best practices on energy and environment through training programmes.
- Development of green procurement policy, waste

management policy, solid waste disposal, carbon neutrality and phytoremediation. GreenCo rating system developed by CII evaluates the green initiative and the rate of performance of industrial units who are pursuing environmentally sustainable practice and also certifies green building, green campus and green schools etc.

#### Background

Indian Railways and CII have been working together since signing of MoU in 2016 on green rating and energy efficiency studies of IR's production units and major workshops and after assessment in last three years, 50 railway units including workshops and production units have achieved GreenCo certification. In addition, 12 railway stations and 16 more buildings and other facilities have also achieved green certification.



#### 1. Major and Minor Plates of the Earth



- Earth scientists have attempted to explain the formation of physical features with the help of some theories based on certain evidences.
- One such plausible theory is the "Theory of Plate Tectonics". According to this theory, the crust (upper part) of the Earth has been formed out of seven major and some minor plates.
- The major plates are Antarctica and the surrounding oceanic plate; North American (with Western Atlantic floor separated from the South American plate along the Caribbean islands) plate; South American (with Western Atlantic floor separated from the North American plate along the Caribbean islands) plate; Pacific plate; India-Australia-New Zealand plate; Africa with the Eastern Atlantic floor plate and Eurasia and the adjacent oceanic plate.
- Some important minor plates are Cocos plate : between Central America and Pacific plate; Nazca plate : between South America and Pacific plate; Arabian plate : mostly the Saudi Arabian landmass; Philippine plate : between the Asiatic and Pacific plate; Caroline plate : between the Philippine and Indian plate (North of New Guinea) and Fuji plate : North-east of Australia.
- The movement of these plates have changed the position and size of the continents over millions of years. Such movements have also influenced the evolution of the present landform features.



#### 2. Movement of Plates

#### **Key Facts**



- A tectonic plate (also called lithospheric plate) is a massive, irregularly-shaped slab of solid rock, generally composed of both continental and oceanic lithosphere. Plates move horizontally over the asthenosphere as rigid units.
- The movement of the plates results in the building up of stresses within the plates and the continental rocks above, leading to folding, faulting and volcanic activity.
- Plate movements are classified into three types. These are:
  - (i) Divergent Boundaries: Where new crust is generated as the plates pull away from each other. The sites where the plates move away from each other are called spreading sites. Example is Mid-Atlantic Ridge.
  - (ii) Convergent Boundaries: Where the crust is destroyed as one plate dived under another. The location where sinking of a plate occurs is called a subduction zone. There are three ways in which convergence can occur. These are: (i) between an oceanic and continental plate; (ii) between two oceanic plates; and (iii) between two continental plates.
  - (iii) Transform Boundaries: Where the crust is neither produced nor destroyed as the plates slide horizontally past each other. Transform faults are the planes of separation generally perpendicular to the midoceanic ridges.

#### 3. Divisions of the Ocean Floors

#### **Key Facts**

- The ocean floors can be divided into four major divisions- the Continental Shelf; the Continental Slope; the Deep Sea Plain and the Oceanic Deeps. Besides, these divisions there are also major and minor relief features in the ocean floors like ridges, hills, sea mounts, guyots, trenches, canyons, etc.
- The continental shelf is the extended margin of each continent occupied by relatively shallow seas and gulfs. It is the shallowest part of the ocean. The average width of continental shelves is about 80 km.
- The continental slope connects the continental shelf and the ocean basins. It begins where the bottom of the continental shelf sharply drops off into a steep slope. The depth of the slope region varies between 200 and 3,000 m. The slope boundary indicates the end of the continents. Canyons and trenches are observed in this region.
- Deep sea plains are gently sloping areas of the ocean basins. These are the flattest and smoothest regions of the world. The depths vary between 3,000 and 6,000 m. These plains are covered with fine-grained sediments like clay and silt.
- Oceanic deeps or trenches are the deepest parts of the oceans. The trenches are relatively steep sided, narrow basins. They are some 3-5 km deeper than the surrounding ocean floor. They occur at the bases of continental slopes and along island arcs and are associated with active volcanoes and strong earthquakes. That is why they are very significant in the study of plate movements.



#### 4. Salinity of Ocean Waters

#### **Key Facts**



Salinity is the term used to define the total content of dissolved salts in sea water. It is calculated as the amount of salt (in gm) dissolved in 1,000 gm (1 kg) of seawater. It is usually expressed as parts per thousand ‰ or ppt. Salinity changes with depth,

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but the way it changes depends upon the location of the sea.

Salinity at the surface increases by the loss of water to ice or evaporation, or decreased by the input of fresh waters, such as from the rivers.

- Salinity at depth is very much fixed, because there is no way that water is 'lost', or the salt is 'added.' There is a marked difference in the salinity between the surface zones and the deep zones of the oceans.
- The lower salinity water rests above the higher salinity dense water. Salinity, generally, increases with depth and there is a distinct zone called the 'halocline', where salinity increases sharply. Other factors being constant, increasing salinity of seawater causes its density to increase. High salinity seawater, generally, sinks below the lower salinity water. This leads to stratification by salinity.

#### 5. Tropical Cyclones

#### Key Facts

- Tropical Cyclones are known as Cyclones in the Indian Ocean, Hurricanes in the Atlantic, Typhoons in the Western Pacific and South China Sea, and Willy-willies in the Western Australia.
- Tropical cyclones originate and intensify over warm tropical oceans. The conditions favourable for the formation and intensification of tropical storms are large sea surface with temperature higher than 27° C; presence of the Coriolis force; small variations in the vertical wind speed; a pre-existing weak low-pressure area or low-level-cyclonic circulation; and upper divergence above the sea level system.
- The energy that intensifies the storm, comes from the condensation process in the towering cumulonimbus clouds, surrounding the centre of the storm. With continuous supply of moisture from the sea, the storm is further strengthened. On reaching the land the moisture supply is cut off and the storm dissipates. The place where a tropical cyclone crosses the coast is called the landfall of the cyclone.
- A mature tropical cyclone is characterised by the strong spirally circulating wind around the centre, called the eye. The diameter of the circulating system can vary between 150 and 250 km. The eye is a region of calm with subsiding air.
- Around the eye is the eye wall, where there is a strong spiralling ascent of air to greater height reaching the tropopause. The wind reaches maximum velocity in this region, reaching as high as 250 km per hour.



#### 6. The Himalayas



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The Himalayas, geologically young and structurally fold mountains stretch over the Northern borders of India. These mountain ranges run in a West-East direction from the Indus River to the Brahmaputra River.

The Himalayas represent the loftiest and one of the most rugged mountain barriers of the world. They form an arc, which covers a distance of about 2,400 Km. Their width varies from 400 Km in Kashmir to 150 Km in Arunachal Pradesh.

The altitudinal variations are greater in the Eastern half than those in the Western half. The Himalaya consists of three parallel ranges in its longitudinal extent.

The Northern-most range is known as the 'Great or Inner Himalayas' or the 'Himadri'. It is the most continuous range consisting of the loftiest peaks with an average height of 6,000 metres. It contains all prominent Himalayan peaks.

- The range lying to the South of the Himadri forms the most rugged mountain system and is known as 'Himachal or lesser Himalaya'. The altitude varies between 3,700 and 4,500 metres and the average width is of 50 Km. While the Pir Panjal range forms the longest and the most important range, the Dhaula Dhar and the Mahabharat ranges are also prominent ones.
- The outer-most range of the Himalayas is called the 'Shiwaliks.' They extend over a width of 10-50 Km and have an altitude varying between 900 and 1100 metres. The longitudinal valley lying between lesser Himalaya and the Shiwaliks are known as Duns. Dehra Dun, Kotli Dun and Patli Dun are some of the well-known Duns.



#### 7. Distribution of Earthquakes and Volcanoes

A line of dots in the central parts of the Atlantic Ocean almost parallel to the coastlines. It further extends into the Indian Ocean.

- It bifurcates a little South of the Indian subcontinent with one branch moving into East Africa and the other meeting a similar line from Myanmar to New Guiana. This line of dots coincides with the midoceanic ridges. All along the midoceanic ridges, volcanic eruptions are common.
- The shaded belt showing another area of concentration coincides with the Alpine-Himalayan system and the 'rim of the Pacific Ocean'.
- In general, the foci of the earthquake in the areas of mid-oceanic ridges are at shallow depths whereas along the Alpine-Himalayan belt as well as the rim of the Pacific, the earthquakes are deep-seated ones.
- The deep trenches have deep-seated earthquake occurrences while in the midoceanic ridge areas, the quake foci have shallow depths.
- The map of volcanoes also shows a similar pattern. The rim of the Pacific is also called 'rim of fire' due to the existence of active volcanoes in this area.



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