

Targeted

CURRENT AFFAIRS

and Issues Update

FEBRUARY 2021



SOUTH CHINA SEA

REGIONAL COMPREHENSIVE ECONOMIC PARTNERSHIP

SPECIAL STATUS TO NORTH-EASTERN STATES

OCEAN RENEWABLE ENERGY

SELF HELP GROUPS

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This magazine reflects our philosophy that is ‘Education Made Simple’. It covers current affairs and important issues in an easy to understand manner and the coverage is crisp within optimum pages.

The magazine covers the following sections:

International Relations; Geography and Environment; Science and Technology; Polity; Economy; Society; Security; History and Culture.

The magazine also presents a practice set of 50 Multiple Choice Questions (MCQs).

The entire coverage is exam oriented hence all the current affairs and issues have been selected and presented in a targeted manner.

In short- targeted coverage, easy to understand language, crisp presentation can provide an ideal recipe for the students for faster reading of current affairs and issues of the month.

It is easy to revise, will save time and energy, and the students can gain maximum confidence in their preparation.

Go through it.

SHIELD IAS

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MULTIPLE CHOICE QUESTIONS

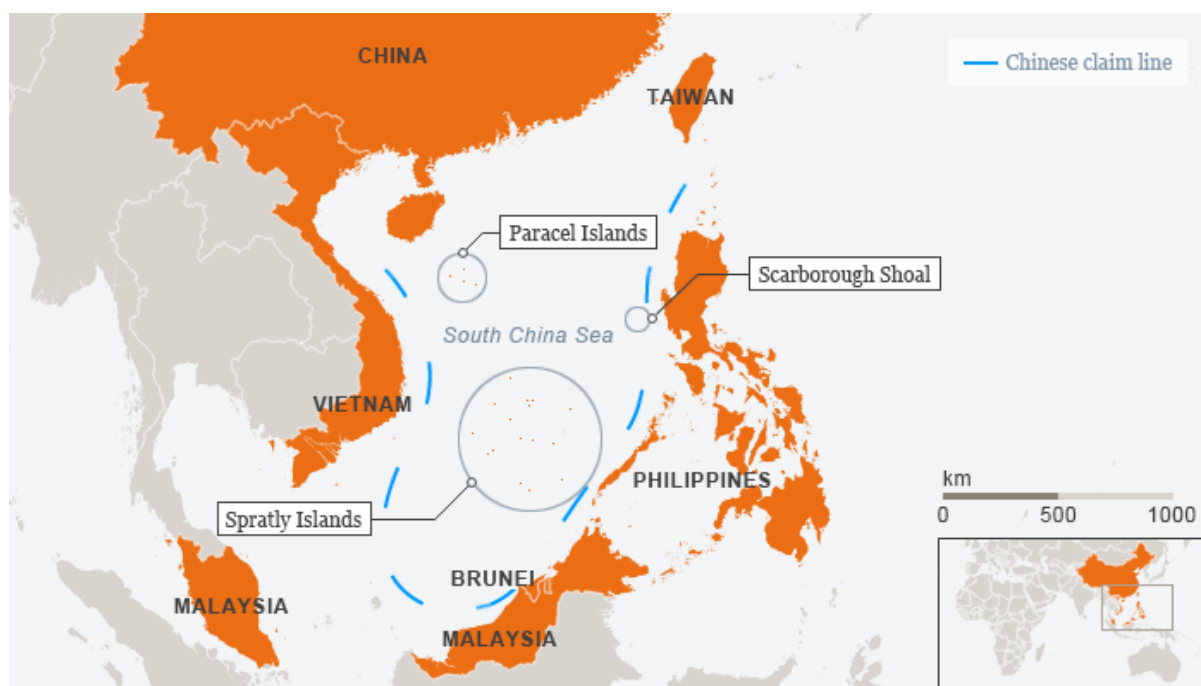
50 MCQs...66

INTERNATIONAL RELATIONS

(Geopolitics; India and the World; India and its Neighbourhood)

SOUTH CHINA SEA

- The SCS is a busy international waterway, and is one of the main arteries of the global economy and trade.
 - More than \$5 trillion of world trade ships pass through the SCS every year.
 - **Minerals:** The SCS is also resource rich, with numerous offshore oil and gas blocks.
 - It is an area of disputed islands like Spratly Islands, Paracel Islands and Scarborough Shoal.
 - There are claims and counter-claims on their ownership by China, Vietnam, Malaysia, Brunei, Philippines and Taiwan.
 - **Threat:** China being the biggest power in this region has repeatedly warned all these countries not to infringe on what it considers its sovereign rights in the strategically vital area.
 - China claims the area on the basis of its version of '**Nine-Dash Line**'. To extend its claim, China started developing artificial islands and this intensified the dispute.
- **Nine-Dash Line:** The 'nine-dash line' stretches hundreds of kilometers south and east of China, covering the strategic Paracel and Spratly island chains. China proclaims its claims by citing 2,000 years of history when the two island chains were regarded as its integral parts.



ASHGABAT AGREEMENT

- Ashgabat agreement is the establishment of an International Transport and Transit Corridor among Iran, Oman, Turkmenistan and Uzbekistan, and came into force in 2011.
- The agreement envisages setting up of an international transport and transit corridor linking central Asia with the Persian Gulf to facilitate transit and transportation of trade and investment in goods.
- The founding members were **Turkmenistan, Iran, Oman and Uzbekistan**. Kazakhstan joined in 2016 and India became a member in 2018.
- India's membership to the agreement would diversify India's connectivity options with Central Asia such as the use of Iran-Turkmenistan-Kazakhstan (ITK) railway line which can be linked with the Chabahar-Zahedan railway line that India is aiding in formation.

- The Ashgabat multi-modal corridor is intended to be complimentary and to be synchronised with the International North South Transport Corridor (INSTC) for enhanced connectivity.
- Similarly, Ashgabat agreement member countries are synchronized with TIR carnets and India became a member of the Customs Convention on the International Transport of Goods under TIR Convention of 1975 in 2017.
- TIR is intended to provide the principal security for movement of transit cargo. It has an internationally recognised customs transit document that accompanies truck drivers and the cargo across custom points from origin to destination.

DJIBOUTI

Chinese foothold increases with a base in Djibouti.

- Djibouti is a country in the Horn of Africa. It is located on the **Bab-el-Mandeb strait**, which provides southern entrance to the Red Sea on the route to Suez Canal.
- The **significance of Suez Canal**, as the world's busiest trade route and shipping lane, increases the strategic importance of Djibouti.
- Its proximity to **Middle-east**, the major oil supplying countries further increases its importance.
- Due to this significance major superpowers such as US, Japan, France etc. always vie for military bases in Djibouti to have control on oil trade route.
- Djibouti offers best location due to relatively stable political scenario to deal with unrest in Somalia and Yemen, region of sea-piracy and Islamic militants with global ramification.
- Djibouti also provides access to other African nations as it has relatively developed infrastructure and well connected roads with the capitals of neighbouring countries such as Ethiopia.



G4

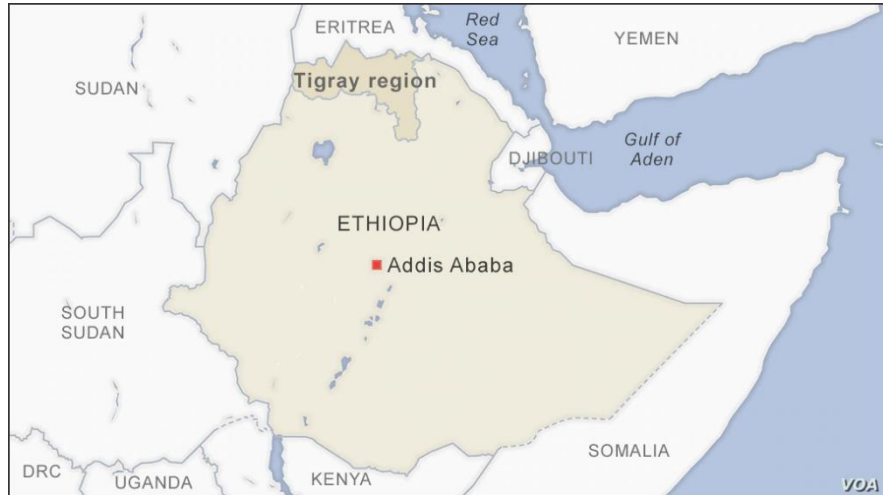
- The G4 nations comprises of **Brazil, Germany, India, and Japan**.
- The primary aim of G4 is the **reform of United Nations Security Council (UNSC)** and the attainment of a permanent seat for its member(s).
- The group has insisted on an expansion of both permanent and non-permanent members and an improvement in the working method of UNSC.
- The four nations have declared their candidature for a permanent seat within an expanded UNSC and, have supported the candidature of each other for the same position.
- The formation of the G4 led to formation of the informal group of '**Coffee Club**' or '**Uniting for Consensus**'.
- It is a group of nations that are selectively opposed to the four members due to regional rivalry and includes countries that consider the expansion of UNSC as un-necessary for global governance.
- Italy has united with members of Coffee Club and is calling for a consensus before any decision is reached on the form and size of the Security Council.
- Italy has opposed Germany's bid, and prefers a seat for the European Union.
- Similarly, Italy has not supported India's bid for a permanent seat in UNSC.

ETHIOPIA

A conflict is going on in the Tigray region of Ethiopia.

Tigray People's Liberation Front (TPLF)

- Founded in 1975 as a resistance army of Tigrayan people against military dictatorship, which was called the Derg.
- The leftist Derg, which was established in 1974, later changed its name in 1987 but remained in power till it was ousted by armed rebels in 1991.
- TPLF played a crucial role in ousting the junta and they were welcomed as national heroes in 1991.
- Leader of TPLF Meles Zenawi took over as interim President in 1991 and became first elected Prime Minister in 1995. Zenawi is seen as the architect of Ethiopia's ethno-federal system and remained in power till 2012.
- However, coalition government (EPRDF) led by Zenawi was criticised of being authoritarian and there were frequent protests against it.
- In 2018, Mr Abiy (current PM) (Oromo) was chosen as the leader of the coalition (EPRDF) amid growing protests and a political deadlock.



Criticism of the government:

- EPRDF coalition provided Ethiopia with a stable government for 17 years and rapid economic growth. However, the ethno-federal arrangement of the country was criticised.
- Tigray people make 6%, Oromos 34% and Amharas 27% of Ethiopian population. While the TPLF dominated political power through the EPRDF, the Oromos alleged marginalisation.
- PM Abiy tried to curb the dominance of TPLF in the government by removing TPLF functionaries from key government posts, releasing political prisoners and increasing media freedom.
- He reached out to Eritrea, which is sworn enemy of TPLF, which shares a long border with the Tigray region.
- Abiy is Ethiopia first Oromo leader has promised that his actions are not driven by ethnic calculations but aimed at democratising the Ethiopian society and making peace with neighbours. But TPLF saw his moves as hostile.

Rise of tensions:

- When Mr Abiy formed a new political coalition called the Prosperity Party all constituents of EPRDF joined it except TPLF. TPLF saw the formation as an attempt of Mr Abiy to consolidate power and marginalise Tigrays.
- In August 2020, Mr Abiy postponed parliamentary elections due to COVID, TPLF saw it as power grab. TPLF held elections in the northern region in defiance of federal government.
- Later the TPLF attacked the federal military command in Tigray region and captured military hardware prompting Mr Abiy to declare a military operation.

Geopolitical concerns:

- Abiy's outreach to Eritrea outraged TPLF which had fought a long war with Eritrean government along the Tigray region. Tigray rebels have fired rockets into Eritrea and Amhara region threatening a regional war.
- The short operation can spill out of control as Tigray rebels have thousands of fighters in their command who have experience in resisting Derg regime.
- Tigray region shares boundary with Sudan with which it enjoys good relations. Sudan has a border dispute with Ethiopia. If the new Sudanese regimes supports TPLF then the struggle can continue for long.

Duqm Port

- The port is located on **Oman's southern coast** and also provides access onward into the **Red Sea through the Gulf of Aden**.
- The port is near to the Chabahar and Gwadar port.
- India and Oman finalized an agreement that will see India gain access to the strategically located port of Duqm.
- The Indian Navy will be able to use the port for logistics and thereby allowing it to sustain long-term operations in the western Indian Ocean.
- Moreover, a dry dock will be available to the Indian Navy at Duqm thereby allowing for maintenance without returning vessels to India-based shipyards.
- A cause of concern for India would be that the SEZ in Duqm is being financed and has considerable presence of China
- The Duqm port would enhance the sustainable security network of India in the Indian Ocean region against piracy and growing presence of China.



- India's strategic linkages in the Indian Ocean region would include Duqm in Oman, Chabahar in Iran, Assumption Island in the Seychelles, Agalega in Mauritius, and the Andaman and Nicobar Islands.
- Moreover, under the Logistics Exchange Memorandum of Agreement (LEMOA) with United States, India can access the support facility at US base at Diego Garcia.

EURASIAN ECONOMIC UNION (EAEU)

- The Eurasian Economic Union (EAEU) is an economic union of states located in Eastern Europe, Western Asia, and Central Asia.
- Founded in 2015, the EAEU is a free trade bloc consisting of **Russia, Belarus, Armenia, Kazakhstan and Kyrgyzstan**. The union has a market of 183 million people and a combined gross domestic product of over \$1.9 trillion.
- The EAEU has focused much of its efforts on building economic ties with Asia, signing free trade deals with Vietnam in 2015 and Singapore in 2019. It is currently negotiating with Indonesia, Thailand, Brunei, the Philippines and Cambodia.
- Russia is also pushing for India's entry into EAEU.
- India and the Eurasian Economic Union (EAEU) are discussing the possibility of signing a Free Trade Agreement (FTA).



ICC, ICJ & Permanent Court of Arbitration

	International Court of Justice	International Criminal Court	Permanent Court of Arbitration
Established	June, 1945 by the Charter of the United Nations	July, 2002 as per the provisions of the Rome Statute of the International Criminal Court.	Established by the Convention for the Pacific Settlement of International Disputes, during the first Hague Peace Conference in 1899.
Members	Countries that are UN members are de-facto members of the ICJ.	Countries that have ratified the Rome Statute are members of the ICC.	Parties to the Convention on the Pacific Settlement of disputes of 1899 and 1907 are automatically parties to the PCA.
Jurisdiction	<p>Jurisdiction in contentious dispute of legal nature among its Member States.</p> <p>This can be extended to a non-member State on recommendation of UNSC and UNGA.</p> <p>Advisory jurisdiction in dispute involving an UN Organ & Specialised Agencies.</p>	Individuals accused of crimes of genocide, crimes against humanity, war crimes and the crime of aggression in member-States or those referred by the UNSC.	<p>It has a permanent framework for arbitral tribunals constituted to resolve specific disputes.</p> <p>It resolves dispute involving various among states, state entities, international organizations and private parties.</p>

INDIA AND ITS NEIGHBOURS

Challenges in India's Neighbourhood -

- India's neighborhood is a complex one.
- Largest region in the world by Population.
- It is **one of the least integrated regions** with tremendous deficits in terms of infrastructure, connectivity, and interdependence.
- Also, this region is now being **exposed to various geopolitical competition dynamics** because of rise of China and increasing US influence in the region.
- As far as Chinese influence in the region is concerned India is faced mainly three challenges:

1. COVID - 19 Pandemic
2. Growing competition for influence in South Asia, and
3. Chinese aggression along the Line of Actual Control (LAC)

COVID - 19 and the competition for influence - Because of the COVID 19 crisis both India and China have competed to increase their influence in the region through the relief efforts.

Indian efforts - Even after being one of the worst hit countries by the Pandemic, India because of its inherent strength in the Pharma sector and its influence in South Asia has effectively used this crisis to provide relief in the region.

- India is one of the world's **leading producers of pharmaceutical drugs and vaccines**.
- Prime Minister held a special virtual summit of eight SAARC nations and proposed a COVID-19 package.
- Out of which India provided about half of the **\$20 million funding for relief**.
- India's military ran a series of missions to SAARC countries and the Indian Ocean Region (IOR) with supplies of food and medicines.
- India's 'Vande Bharat' mission flew home nationals from neighbouring countries, along with lakhs of Indians who had been stranded during the lockdown.

Chinese efforts -

- China promised to provide the Chinese-made **Sinovac vaccine** to SAARC countries including Pakistan, Afghanistan, Nepal, Bangladesh and Sri Lanka.
- China provided PPE kits and medical equipment to South Asian countries.
- All the SAARC countries are part of the Chinese BRI Project except India and Bhutan.
- And majority of these countries are under Chinese debt.
- As such China has started to provide partial debt waivers to the Maldives and Sri Lanka.
- It also extended a massive **\$1.4-billion Line of Credit to Pakistan**.

Recent Upheavals impacting the regional ties -

Increasing Chinese assertiveness -

- Chinese aggression along the LAC in the Ladakh region led to the death of 20 Indian soldiers in the Galwan valley.
 - China also laid claim to **Bhutan's Sakteng natural reserves**.
 - China has also annexed around 150 hectares of land along the Nepal border.
 - A new defence pact has been signed between China and Pakistan.
 - And there has been a sharp rise in ceasefire violations along the Line of Control (LoC) with Pakistan.
- Rising Chinese aggression and the growing bonhomie between China and Pakistan both in economic and military areas, **point towards the possibility of two front war**.

Other events

- India has witnessed **border issues with Nepal** along the Kalapani.
- Nepal has amended its constitution to include the disputed territory within its Political map.

SAARC on backburner -

- It is said that the format of SAARC is outdated and does not serve the complex, fluid regional cooperation agenda any longer. This is mainly because India has refused to attend the SAARC meeting in Pakistan over terrorism issue.
- Further Pakistan is pursuing its regional connectivity goals exclusively with China in the form of CPEC.
- While India which does not align itself with Chinese OBOR has started focussing on the Indian Ocean region. This has led to a split of the subcontinent between India and Pakistan which has effectively stagnated the SAARC.
- India has revived **BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation)** and worked in the **BBIN (Bangladesh-Bhutan-India-Nepal)** quadrilateral for a framework on motor vehicle and water governance.
- However, India should understand that India's neighbouring countries other than Pakistan have shown interest in the working of the SAARC.

India's response to the Challenges - India has been pushing forward its **Neighbourhood first Policy** and the **SAGAR (Security and Growth for All in the Region) strategy** to handle these recent challenges.

Infrastructure -

- India has stepped up the delivery of Infrastructure in the region.
- Completion of railway lines to Bangladesh and Nepal, riverine projects, ferry service to the Maldives, identifying other services to Sri Lanka and IOR islands.
- India has provided **line of credit to the tune of \$ 400 million to Maldives.**

Welcoming entry of other powers to counter China -

- India has welcomed the U.S.'s new military dialogue with the Maldives.
- America's Millennium Challenge Corporation's (MCC) projects in Afghanistan, Bhutan, Sri Lanka, Nepal and Bangladesh

The Millennium Challenge Corporation (MCC) is an innovative and independent U.S. foreign assistance agency that is helping lead the fight against global poverty. MCC forms partnerships with developing countries who are committed to good governance, economic freedom and investing in their citizens.

Diplomatic efforts -

- India has stepped up the collaboration in the **Quadrilateral Security Dialogue.**
- **Malabar naval exercise** has been expanded to include Australia.

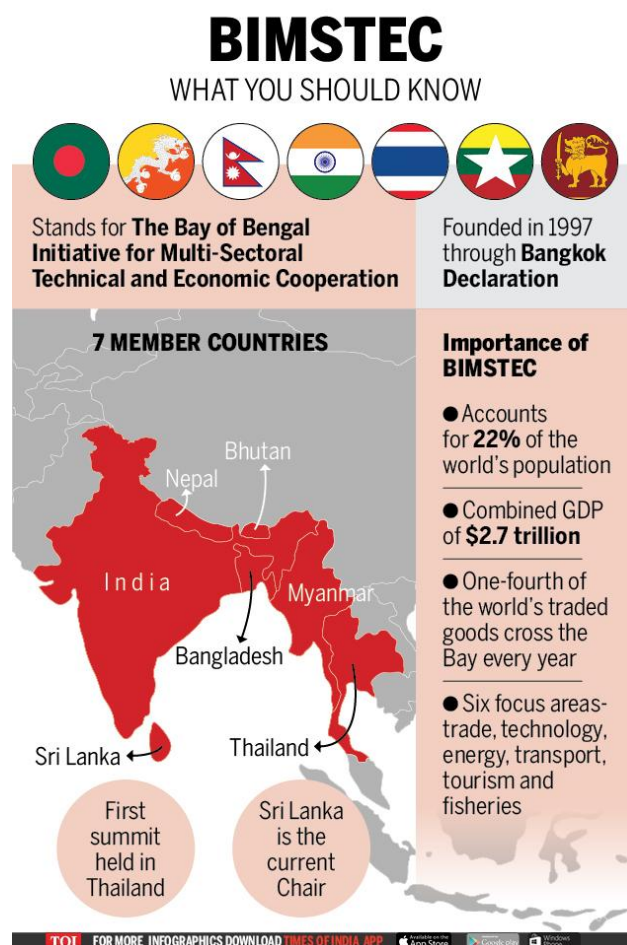
Future possibilities

- India's engagement with our neighbouring countries should not be episodic. It should not be event-oriented; it should be process-oriented. India needs to have a plan for continuous engagement at various levels.
- India has realised that there is a **need for greater connectivity and integration in the region**, especially because of the increasing Chinese influence in its neighbourhood.
- Further to check the growing Chinese influence in the neighbourhood, **India should focus on creating interdependence in the region with the aim of extracting strategic leverage.**
- We know that India has taken over various connectivity initiatives, in terms of energy, interdependence, infrastructural connectivity, grants and loans.

- However, it is being said that these connectivity initiatives will be meaningless if there is lack of economic integration and easy movement of people and capital.
- India should not be averse to the idea of cooperation in the subcontinent by the way of SAARC.
- Also, if India moves away from SAARC it is quite possible that China can be invited to this forum. This will make things even more difficult for India.

BIMSTEC

- The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a regional organization comprising seven member states lying in the littoral and adjacent areas of the Bay of Bengal.
- These are **Bangladesh, Bhutan, India, Nepal, Sri Lanka, Myanmar and Thailand.**
- **Established:** In 1997 by four countries Bangladesh, India, Sri Lanka and Thailand.
- **Headquarters:** Dhaka, Bangladesh.
- BIMSTEC is a sector-driven cooperative organization.
- Started with **six sectors** in 1997, i.e. trade, technology, energy, transport, tourism and fisheries.
- It expanded to more sectors in 2008 i.e. agriculture, public health, poverty alleviation, counter-terrorism, environment, culture, people to people contact and climate change.
- It is a bridge to ASEAN for India as Myanmar and Thailand are members of both BIMSTEC and ASEAN.
- Improve connectivity of India: BIMSTEC has three major projects, when finished, could transform the movement of goods and vehicles through the countries in the grouping. These are:



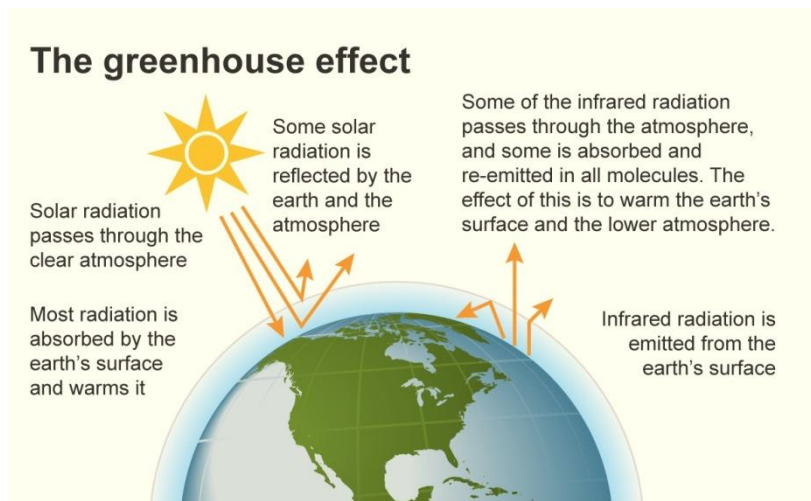
- Kaladan Multimodal project
- Asian Trilateral Highway connecting India and Thailand through Myanmar. The highway will run from Moreh in Manipur to Mae Sot in Thailand via Myanmar and represents a significant step in establishing connectivity between India and Southeast Asian countries.
- Bangladesh, Bhutan, India and Nepal (BBIN) for the movement of goods and vehicles among them.

GEOGRAPHY AND ENVIRONMENT

(Ecology; Biodiversity and Disaster Management)

GREEN HOUSE EFFECT AND GREEN HOUSE GASES

- Greenhouse gases (GHGs) are a group of gases that are able to absorb heat in the atmosphere keeping the earth's surface warm. This absorbed heat/thermal radiation by the greenhouse gases is re-radiated back to earth's surface in all directions. This ability of gases to trap heat in thermal form and spread evenly at earth's surface is known as Greenhouse effect.



- The spreading of these greenhouse gases is responsible for the heat required to sustain life on earth. But the presence of these GHGs in excess enhances the Greenhouse effect which is creating global warming and consequently climate change.
- Water vapour (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O) and methane (CH_4) are the primary greenhouse gases in the Earth's atmosphere.
- Along with the rapid industrialisation in the 19th and 20th centuries human activities such as burning of fossil fuels and deforestation have increased the level of the presence of these gases within the earth's atmosphere.

- UNFCCC's (United Nations Framework Convention on Climate Change) **Kyoto Protocol** has recognised six main greenhouse gases primarily responsible for global warming. They are:
- Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydro fluorocarbons (HFCs), Per fluorocarbons (PFCs), Sulphur hexafluoride (SF_6).

- The most dominant greenhouse gas overall is water vapour, but it has a very short atmospheric lifetime (about 10 days) and is very nearly in a dynamic equilibrium in the atmosphere, so it is not a forcing gas in the context of global warming.
- CO_2 is identified as the dominant greenhouse gas followed by methane and nitrous oxide as the major forcing contributors to global warming.
- Maximum anthropogenic GHG emissions is from Power stations followed by Industries, Transportation fuels, Agriculture by-products, Land use and burning, etc.

Green House Gas	Sources and Causes
Carbon dioxide (CO_2)	Burning of fossil fuels, deforestation
Methane (CH_4)	Growing paddy, excreta of cattle and other livestock, termites, burning of fossil fuel, wood, landfills, wetlands, fertilizer factories.
Nitrous oxides (N_2O)	Burning of fossil fuels, fertilizers; burning of wood and crop residue.
Hydro fluorocarbons (HFCs)	Used as refrigerants, aerosol propellants, solvents and fire retardants.
Per fluorocarbons (PFCs)	Produced as a by-product in aluminium production and manufacturing of semi-conductors.
Sulphur hexafluoride (SF_6)	Used as tracer gas for leak detection, used in electrical transmission

UNFCCC

United Nation Framework Convention on Climate Change (UNFCCC) is an international environment treaty opened for signature in 1992. It came into force from 1994. Secretariat is located in Bonn, Germany. The convention is legally non-binding, but makes provisions for meeting called protocols where negotiating countries can set legally binding limits.

- It **aims to stabilize greenhouse gas concentrations** in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The framework set no binding limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. Instead, the framework outlines how specific international treaties (called "protocols" or "Agreements") may be negotiated to set binding limits on greenhouse gases. Kyoto Protocol was negotiated under this framework.
- One of the first tasks set by the UNFCCC was for signatory nations to establish national greenhouse inventories of greenhouse gas (GHG) emissions and removals, which were used to create the 1990 benchmark levels for accession of Annex I countries to the Kyoto Protocol and for the commitment of those countries to GHG reductions. Updated inventories must be regularly submitted by Annex I countries. Annex I, Annex II countries and developing countries.

- **Parties to UNFCCC are classified as:**

- **Annex I countries:** Industrialized countries and economies in transition.
- **Annex II countries:** Developed countries which pay for costs of developing countries. Annex II countries are a sub-group of the Annex I countries.
- **Non-Annex I countries:** Developing countries are not required to reduce emission levels unless developed countries supply enough funding and technology.
- **Setting no immediate restrictions under UNFCCC serves three purposes:** i. It avoids restrictions on their development, because emissions are strongly linked to industrial capacity; ii. They can sell emissions credits to nations whose operators have difficulty meeting their emissions targets; iii. they get money and technologies for low-carbon investments from Annex II countries; iv. Developing countries may volunteer to become Annex I countries when they are sufficiently developed; v. India is Non Annex party to UNFCCC.

REDD and REDD+

- It is a mechanism negotiated under UNFCC since 2005.
- Its objective is to mitigate climate change through reducing net emissions of greenhouse gases through enhanced forest management in developing countries.
- Inclusion of reducing emissions from land use change is considered essential to achieve the objectives of the UNFCCC.
- During the negotiations for the Kyoto Protocol the inclusion of tropical forest management was debated but eventually dropped due to anticipated methodological difficulties in establishing – in particular – additionality and leakage (detrimental effects outside of the project area attributable to project activities).
- India did not participate in UN-REDD.
- **REDD+ (Defined in Bali Action Plan, 2007, CoP13)**
- **What constitutes "+":** 1. sustainable management of forests, 2. conservation of forest carbon stocks and 3. enhancement of forest carbon stocks.
- **What is the difference between REDD and REDD+?**
- REDD = "reducing emissions from deforestation in developing countries"

- REDD+ (or REDD-plus) = to "reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries"
- REDD+ is essentially a **vehicle to financially reward developing countries** for their verified efforts to reduce emissions and enhance removals of greenhouse gases through a variety of forest management option.
- India favours REDD+

OZONE LAYER

- The Earth's atmosphere is divided into several layers. The lowest region, the troposphere, extends from the Earth's surface up to about 10 kilometres (km) in altitude. Virtually all human activities occur in the troposphere. Mt. Everest, the tallest mountain on the planet, is only about 9 km high.
- The next layer, the stratosphere, continues from 10 km to about 50 km. Most atmospheric ozone is concentrated in a layer in the stratosphere, about 15-30 kilometers above the Earth's surface.
- This ozone layer in the Earth's stratosphere absorbs most of the Sun's ultraviolet (UV) radiation that may cause skin cancer. It contains high concentrations of ozone (O₃) in relation to other parts of the atmosphere. Stratospheric Ozone is not harmful, but its presence on land is harmful.

Difference between Stratospheric and Tropospheric Ozone

Prescription	Ground-Level Ozone	Stratospheric Ozone
Description	<ul style="list-style-type: none"> • Bad Ozone • Part of Photochemical Smog • Found in Troposphere (0-15 Km) 	<ul style="list-style-type: none"> • Good Ozone • Natural filter that absorbs the Sun's UV rays • Found in Stratosphere (15 - 35 km)
Sources	<ul style="list-style-type: none"> • Forms when Nitrous oxides (NO_x) reacts with Volatile Organic Compounds (VOCs). 	<ul style="list-style-type: none"> • Naturally forms when Oxygen is in the presence of UV radiation.
Effects	<ul style="list-style-type: none"> • Eye and respiratory irritation • Lung tissue damage, shortened lifespan and lung disease • Corrosion in buildings, damage to crops, increase in Vulnerability to diseases. 	<ul style="list-style-type: none"> • Thinning of ozone shield that absorbs UV rays leads to crop damage, Aquatic life death, eye irritation and skin cancer.

INDIAN OCEAN DIPOLE

- IOD measures **differences in sea surface temperatures between the western and eastern parts of the Indian Ocean**. Sustained changes in the difference between sea surface temperatures of the tropical western and eastern Indian Ocean are known as the Indian Ocean Dipole or IOD.
- Indian Ocean Dipole (IOD) is **basically similar to the El Nino weather system** that develops in the Pacific Ocean.
- Indian Ocean sea surface temperatures impact rainfall and temperature patterns over Australia. Warmer than average sea surface temperatures can provide more moisture for frontal systems and lows crossing Australia.
- The IOD is one of the key drivers of Australia's climate and can have a significant impact on agriculture. This is because events generally coincide with the winter crop growing season.

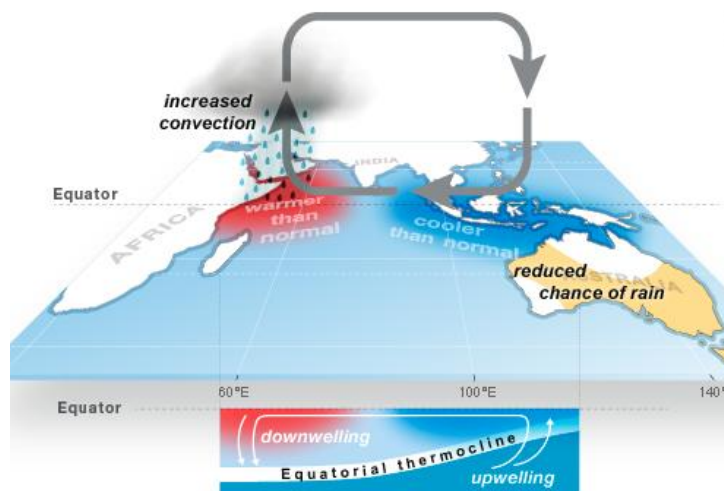
- The IOD has **three phases: neutral, positive and negative**. Events usually start around May or June, peak between August and October and then rapidly decay when the monsoon arrives in the southern hemisphere around the end of spring.

- **Neutral IOD phase:** Water from the Pacific flows between the islands of Indonesia, keeping seas to Australia's northwest warm. Air rises above this area and falls over the western half of the Indian Ocean basin, blowing westerly winds along the equator.

- **Positive IOD phase:** Westerly winds weaken along the equator allowing warm water to shift towards Africa. Changes in the winds also allow cool water to rise up from the deep ocean in the east.

- This sets up a temperature difference across the tropical Indian Ocean with cooler than normal water in the east and warmer than normal water in the west.

- During the positive phase of Indian Ocean dipole the water over western Indian Ocean is warmer than normal leading to formation of troughs (low pressure regions) and thus enhanced rainfall.

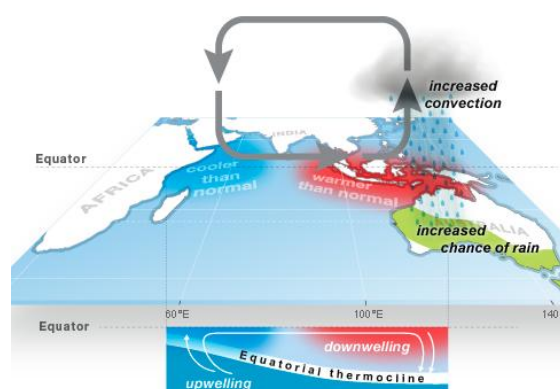


Indian Ocean Dipole (IOD): **Positive phase**

- On the other hand, cooler waters develop off Indonesia resulting in less rainfall and high temperatures in Australia.

- **Negative IOD phase:** Westerly winds intensify along the equator, allowing warmer waters to concentrate near Australia. This sets up a temperature difference across the tropical Indian Ocean, with warmer than normal water in the east and cooler than normal water in the west.

- A negative IOD typically results in above-average winter–spring rainfall over parts of Australia as the warmer waters off northwest Australia provide more available moisture to weather systems crossing the country.



Indian Ocean Dipole (IOD): **Negative phase**

IRRAWADDY DOLPHIN

- Map showing distribution of Irrawaddy Dolphin
- It is a variety of Oceanic Dolphin.
- **Habitat:** Shallow oceans, River and Estuaries
- Since they inhabit the shallow regions of the oceans, they go through maximum confrontation with humans
- **Threats:** Fishing nets, Dam construction, Gold mining leads to toxic effluent discharge into the ocean.



- **IUCN Status:** Endangered

CONVENTION ON BIOLOGICAL DIVERSITY

- The Convention on Biological Diversity (CBD), known informally as the Biodiversity Convention, is a **multilateral treaty**.
- The Convention on Biological Diversity (CBD) was adopted at the Earth Summit, in Rio de Janeiro, in 1992.
- It has three main objectives:

- a. To conserve biological diversity;
- b. To use its components in a sustainable way;
- c. To share fairly and equitably the benefits arising from the use of genetic resources.

- The CBD was negotiated under the guidance of the United Nations. It was signed by more than 150 government leaders at the Rio Earth Summit (which official denomination is the 'United Nations Conference on Environment and Development').
- The convention is now one of the most widely ratified international treaties on environmental issues, with 194 member countries.
- Unlike other international agreements that set compulsory targets and obligations, the CBD takes a flexible approach to implementation.
- It identifies general goals and policies, and countries are free to determine how they want to implement them.

- **The Convention on Biological Diversity has adopted two supplementary protocols they are:**

1. **The Cartagena Protocol on Bio-safety** - The Cartagena Protocol on Bio-safety to the Convention on Biological Diversity is an international treaty governing the movements of living modified organisms (LMOs) resulting from modern biotechnology from one country to another. It was adopted in 2000 as a supplementary agreement to the Convention on Biological Diversity and entered into force in 2003.
2. **Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization** - The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity is a supplementary agreement to the Convention on Biological Diversity.
 - It provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: **the fair and equitable sharing of benefits arising out of the utilization of genetic resources**. The Protocol was adopted in 2010 in Nagoya, Aichi Province, Japan, and entered into force in 2014.
 - Its objective is the fair and equitable sharing of benefits arising from the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity. The Strategic Plan consists of 20 new biodiversity targets, termed the '**Aichi Biodiversity Targets**'

- **Aichi Biodiversity Targets**

The 20 Aichi Targets are divided into 5 sections

- **Strategic Goal A:** Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- **Strategic Goal B:** Reduce the direct pressures on biodiversity and promote sustainable use.
- **Strategic Goal C:** To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
- **Strategic Goal D:** Enhance the benefits to all from biodiversity and ecosystem services.
- **Strategic Goal E:** Enhance implementation through participatory planning, knowledge management and capacity building.

PROTECTED AREAS OF INDIA

- **National Parks** - An area, whether within a sanctuary or not, can be notified by the state government to be constituted as a National Park, by reason of its ecological, faunal, floral, geomorphological, or zoological association or importance, needed to for the purpose of protecting & propagating or developing wildlife therein or its environment. No human activity is permitted inside the national park except for the ones permitted by the Chief Wildlife Warden of the state under the conditions given in the wildlife protection Act 1972.
- **Wildlife Sanctuaries**- Any area other than area comprised with any reserve forest or the territorial waters can be notified by the State Government to constitute as a sanctuary if such area is of adequate ecological, faunal, floral, geomorphological, natural or zoological significance, for the purpose of protecting, propagating or developing wildlife or its environment. Some restricted human activities are allowed inside the Sanctuary area details of which are given in wildlife protection Act 1972.
- **Conservation reserves and community reserves**- These are terms denoting protected areas of India which typically act as buffer zones to or connectors and migration corridors between established national parks, wildlife sanctuaries and reserved and protected forests of India. Such areas are designated as conservation areas if they are uninhabited and completely owned by the Government of India but used for subsistence by communities and community areas if part of the lands is privately owned. These categories were added because of reduced protection in and around existing or proposed protected areas due to private ownership of land, and land use.
- **Marine Protected Areas** - A marine protected area (MPA) is essentially a space in the ocean where human activities are more strictly regulated than the surrounding waters - similar to parks we have on land. These places are given special protections for natural or historic marine resources by local, state, territorial, native, regional, or national authorities.

BIRD LIFE INTERNATIONAL

- Bird Life International is the world's largest nature conservation Partnership.
- Together they are 120 BirdLife Partners worldwide.
- Bird Life International strives to conserve birds, their habitats and global biodiversity, working with people towards sustainability in the use of natural resources.
- Bird Life International is the official Red List authority for birds, for the International Union for Conservation of Nature.
- It identifies the sites known/referred to as '**Important Bird and Biodiversity Areas**'.

TRAFFIC

- The Wildlife Trade Monitoring Network (TRAFFIC)
- Found in 1976, TRAFFIC is a **non-governmental organization** working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.
- TRAFFIC is a joint programme of **World Wide Fund for Nature (WWF)** and IUCN.
- Traffic is complementary to Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
- TRAFFIC's mission is to ensure that trade in wild plants and animals is not a threat to the conservation of nature.
- It investigates and analyses wildlife trade trends, patterns, impacts and drivers to provide the leading knowledge base on trade in wild animals and plants.

NTCA

- The National Tiger Conservation Authority, a statutory body under the Environment Ministry, is constituted under enabling provisions of the Wildlife (Protection) Act 1972, for strengthening tiger conservation, as per powers and functions assigned to it under the said Act.
- The **objectives** of NTCA are:
 - Providing statutory authority to Project Tiger so that compliance of its directives becomes legal.
 - Fostering accountability of Centre-State in management of Tiger Reserves, by providing a basis for MoU with States within our federal structure.
 - Providing for an oversight by Parliament.
 - Addressing livelihood interests of local people in areas surrounding **Tiger Reserves**.
- **Functions:** Its functions are to assist in population assessment of tigers, law enforcement, wildlife forensics, infrastructural development and mitigation, smart patrolling and advisory role in policy formulation.
- 'Project Tiger' is a centrally sponsored scheme of the Ministry of Environment, Forests and Climate Change, providing funding support to tiger range States, for in-situ conservation of tigers in designated tiger reserves.

GREAT INDIAN BUSTARD

- The great Indian bustard or Indian bustard is a bustard found on the Indian subcontinent.
- It is a large bird with a horizontal body and long bare legs, giving it an ostrich like appearance, this bird is among the heaviest of the flying birds.
- **Range** - Once common on the dry plains of the Indian subcontinent, as few as 150 individuals were estimated to survive in 2018 (reduced from an estimated 250 individuals in 2011).
- **Conservation status:** This species is **critically endangered**. It is protected under Wildlife Protection Act 1972 of India.
- Main threats include hunting and loss of its habitat, which consists of large expanses of dry grassland and scrub. Alleged hunting of GIB in Pakistan is believed to be one of the reasons for the plummeting numbers of the bird species.



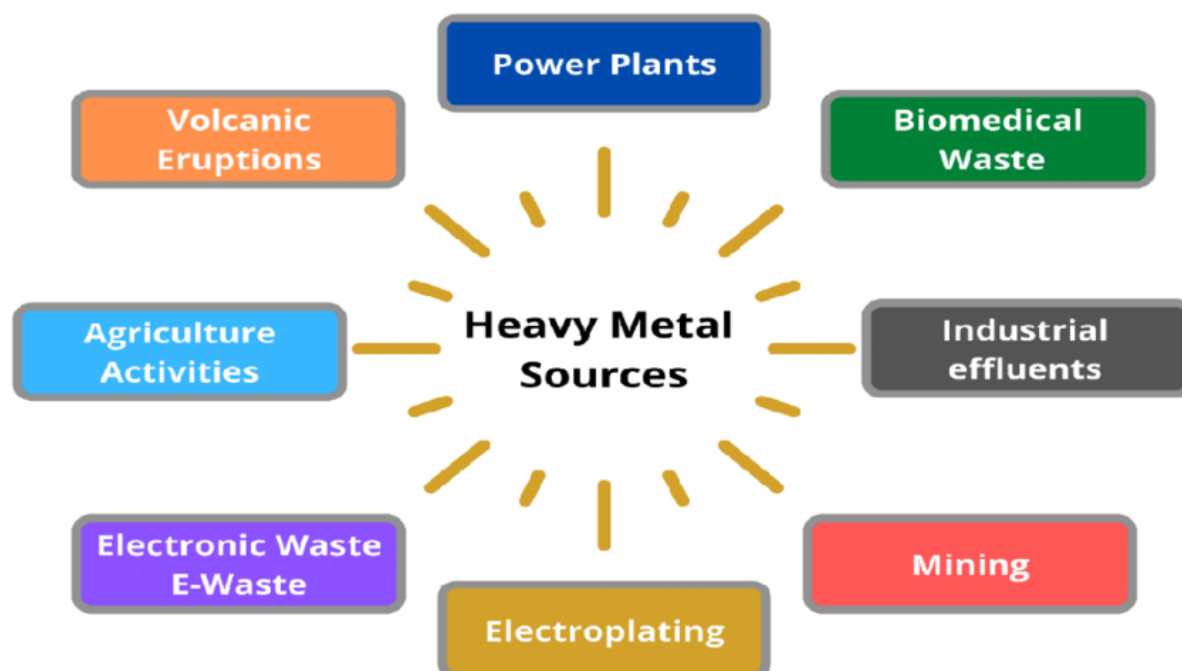
BENGAL FLORICAN

- The Bengal florican is a type of bustard found in the Indian subcontinent.
- It has two disjunct populations, one in the Indian subcontinent, another in Southeast Asia.
- The Indian range is from Uttar Pradesh (India) through the Terai of Nepal to Assam (where it is called ulu mora) and Arunachal Pradesh in India, and historically to Bangladesh.
- **South East Asian** - The South East Asian population occurs in Cambodia and perhaps adjacent southern Vietnam. This species is mostly resident on its breeding grounds; around Tonlé Sap in Cambodia however, the birds use grasslands near the lake to breed, and move away from the water in the wet season when the breeding grounds are flooded. Similarly, the Terai population seems to move to warmer lowland locations in winter. Migrations are not long-distance, however, and probably are restricted to a few dozen kilometres.
- **Conservation status:** This species is **critically endangered**. It is protected under Wildlife Protection Act 1972 of India.
- **Threats:** *Main* threats include hunting and loss of its habitat, which consists of large expanses of dry grassland and scrub.

HEAVY METAL CONTAMINATION

- The presence of metals in drinking water is to some extent unavoidable and certain metals, in trace amounts is required for good health. However, when present above safe limits, they are associated with a range of disorders.

1. Long term exposure of heavy metals may result in slowing progressing physical, muscular and neurological degenerative processes that mimic Alzheimer's disease, Parkinson's disease, muscular dystrophy and multiple sclerosis.
2. Majority of Indians still use water directly from rivers for their domestic use, with an increase in population, the pressure on these rivers will only increase.
3. Concentration of such toxic metals has increased rapidly over the past few decades. Consequently, concentrations of toxic metals in grains and vegetables grown in contaminated soils have increased at alarming rates.
4. Serious threat to humans and the environment because of its toxicity, non-bio- degradability and bioaccumulation.



Arsenic pollution:

- Leads to arsenical skin lesions.
- Arsenicosis is a chronic illness resulting from drinking water with high As level over a long period of time.
- High concentrations of arsenic in drinking water also result in an increase in stillbirths and spontaneous abortions.

Cadmium pollution:

- Itai-Itai disease (Severe pain in body and joints)
- One of the most widely known toxic effects manifested by Cd poisoning is

Pollutants	Major sources	Effect on human health	Permissible levels (mg/L)
As	Pesticides, fungicides, metal smelters	Bronchitis, dermatitis, poisoning	0.02
Cd	Welding, electroplating, pesticides, fertilizer	Renal dysfunction, lung disease, lung cancer, bone defects, kidney damage, bone marrow	0.06
Pb	Paint, pesticides, smoking, automobile emission, mining, burning of coal	Mental retardation in children, development delay, fatal infant encephalopathy, chronic damage to nervous system, liver, kidney damage	0.1
Mn	Welding, fuel addition, ferromanganese production	Inhalation or contact damage to central nervous system	0.26
Hg	Pesticides, batteries, paper industry	Tremors, gingivitis, protoplasm poisoning, damage to nervous system, spontaneous abortion	0.01
Zn	Refineries, brass manufacture, metal plating	Damage to nervous system, dermatitis	15
Cr	Mine, mineral sources	Damage to nervous system, irritability	0.05
Cu	Mining, pesticide production, chemical industry	Anemia, liver and kidney damage, stomach irritation	0.1

nephro-toxicity. Adverse renal effects are more commonly seen with exposure to low levels of Cd.

Chromium Pollution:

- Hexavalent Chromium is a danger to human health, mainly for people who work in the steel and textile industry. People who smoke tobacco also have a higher chance of exposure to chromium. Chromium (VI) is known to cause various health effects. When it is a compound in leather products, it can cause allergic reactions, such as skin rash. After breathing in, chromium (VI) can cause nose irritations and nosebleeds.

Copper Pollution:

- It is seen that though copper is essential for life and health, its deficiency or excesses both cause adverse effects.
- Industrial exposure to copper fumes, dusts, or mists may result in metal fume fever with atrophic changes in nasal mucous membranes. Chronic copper poisoning results in Wilson's Disease, characterized by a hepatic cirrhosis, Brain damage, demyelination, renal disease, and copper deposition in the cornea.

Iron Pollution:

- Iron is an essential element in human nutrition.
- The presence of higher concentration of iron in drinking water makes its taste unpleasant; however, living organism can tolerate higher concentration of iron without any serious damage to their system.
- Causes aesthetic problems such as discoloured water, precipitation, scaling, staining and metallic water taste.

Recommendations:

- 1) Quality of water should be monitored at least four times a year.
- 2) All the toxic metallic elements like chromium and its other associated heavy metals coming from the tanneries, mining and other industries should be treated chemically and biologically before such wastes find their way to River.
- 3) Promotion of effective and efficient implementation of water pollution control laws and regulations.
- 4) There are various wastewater treatment technologies available for treating heavy metals contaminated water prior to ultimate discharge in natural water bodies, for example chemical precipitation, evaporative recovery, oxidation/ reduction, filtration, ion exchange, membrane technologies and electrochemical treatment technologies are commonly used for practical applications.

OCEAN RENEWABLE ENERGY

Ocean renewable energy refers to all forms of renewable energy derived from the sea including wave energy, tidal energy, ocean current energy, salinity gradient energy and ocean thermal gradient energy.

- **Wave Energy:** It is generated from the power of waves near their surface. It can be captured through oscillating water columns, which trap waves in a column and change the air pressure in the upper portion which drives a turbine.
- **Tidal Energy:** The Tides in the oceans are caused by the combined effects of gravitational forces exerted by the Moon, the Sun, and the rotation of the Earth. Tidal Energy converts the natural rise and fall of the tides into Electricity.
- **Ocean Current Energy:** It refers to harnessing the energy of the ocean currents to generate electricity.

- **Salinity gradient energy:** Salinity gradient power is the energy created from the difference in salt concentration between fresh and salt water, e.g., when a river flows into the sea. Hence, Salinity gradient power plants are based on the natural mixing of fresh and salt water.
- **Ocean thermal gradient energy:** It is a technology for producing energy by harnessing the temperature differences (thermal gradients) between ocean surface waters and deep ocean waters.

- India has **wave energy potential of 40,000 MW, tidal energy potential of 9000 MW** and **Ocean thermal gradient energy potential of around 180,000 MW.**
- **Tidal Energy:** To capture sufficient power from the tidal energy potential, the **height of high tide must be at least five meters more than the low tide.** The Gulf of Cambay and the Gulf of Kutch in Gujarat with higher tidal ranges are considered to be suitable places for harnessing tidal energy.

Benefits of harnessing ocean energy

- **Optimum utilisation of Potential:** India has a long coastline with estuaries and gulfs where waves and tides are strong enough to move turbines for electrical power generation.
- **Reliable and Predictable Power:** As tides follow monthly cycle, which are more predictable in nature, the dependence of tidal energy on rise and fall of tides makes tidal energy a more uniform, reliable and predictable energy source. Similarly, wave energy is reliable because of perpetual motion of ocean waves.
- **Easier Grid Integration:** The power generated from renewable sources such as wind and solar is dependent on random weather patterns. Hence, the power generated may face grid integration challenges due to their unpredictable nature. However, ocean energy, being uniform and reliable does not pose grid integration challenges.
- **Seashore protection:** The Offshore breakwaters are used along beaches for providing protection against coastal erosion by the waves. These structures can be combined with tidal and wave energy projects to reap the dual benefits of sea shore protection and harnessing tidal / wave energy.
- **Higher Energy Density:** Water has higher energy density than air i.e. it can store a larger amount of energy per unit volume as compared to other forms of renewable energy, such as the wind. Hence, for a given electricity output, tidal turbines can be much smaller than equivalent wind turbines. Further, it is possible to harness energy at low speeds from wave and tidal sources as compared to wind which require comparatively higher speeds.
- **Less Visual and Noise Impact:** Tidal and wave power systems have less prominent visual impact as compared to wind and solar systems. They require less space as compared to wind turbine or solar projects. Furthermore, they produce less amount of noise, unlike wind turbines, which produce aerodynamic noise, thereby avoiding disturbance to the marine surroundings.
- **Socio-economic Impact:** Ocean Energy projects provide a number of socio-economic benefits for the coastal population ranging from local electricity production and consumption, creation of job opportunities, creation of industrial clusters etc.

SCIENCE AND TECHNOLOGY

(Inventions, Innovations, Discoveries and Explorations)

NEUTRINOS



FUNDAMENTAL

Neutrinos are fundamental particles, which means that—like quarks and photons and electrons—they cannot be broken down into any smaller bits.



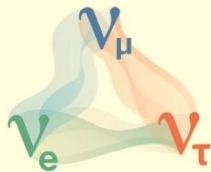
ABUNDANT

Of all particles with mass, neutrinos are the most abundant in nature. They're also some of the least interactive. Roughly a thousand trillion of them pass harmlessly through your body every second.



ELUSIVE

Neutrinos are difficult but not impossible to catch. Scientists have developed many different types of particle detectors to study them.



OSCILLATING

Neutrinos come in three types, called flavors. There are electron neutrinos, muon neutrinos and tau neutrinos. One of the strangest aspects of neutrinos is that they don't pick just one flavor and stick to it. They oscillate between all three.



LIGHTWEIGHT

Neutrinos weigh almost nothing, and they travel close to the speed of light. Neutrino masses are so small that so far no experiment has succeeded in measuring them. The masses of other fundamental particles come from the Higgs field, but neutrinos might get their masses another way.



DIVERSE

Neutrinos are created in many processes in nature. They are produced in the nuclear reactions in the sun, particle decays in the Earth, and the explosions of stars. They are also produced by particle accelerators and in nuclear power plants.



MYSTERIOUS

Neutrinos are mysterious. Experiments seem to hint at the possible existence of a fourth type of neutrino: a sterile neutrino, which would interact even more rarely than the others.



VERY MYSTERIOUS

Scientists also wonder if neutrinos are their own antiparticles. If they are, they could have played a role in the early universe, right after the big bang, when matter came to outnumber antimatter just enough to allow us to exist.

Interested in how the universe works? Read *symmetry*, an online magazine about particle physics and its connections to life and other areas of science. Published by Fermi National Accelerator Laboratory and SLAC National Accelerator Laboratory. symmetrymagazine.org

symmetry | U.S. DEPARTMENT OF ENERGY | Office of Science

- They are produced by the **decay** of radioactive elements. After Photons(light carriers) they are the most abundant particles in the cosmos. They propagate over large distances even through solid matter.
- They **have** mass, but it is exceedingly small, a tiny fraction of the mass of a proton.
- There are 3 types of neutrinos, called **flavors**.
 - One related to the electron, one related to muon and the third type is related to tau.
 - The main difference between the neutrinos and their "relatives" is that neutrinos are electrically neutral, while the electron, muon, and tau are electrically charged.
- Neutrinos are difficult to detect, because they do not readily interact with other forms of matter. But using special equipment located in deep underground laboratories where no other cosmic particles can penetrate, scientists have detected neutrinos and discovered some of their properties.

Neutrinos Oscillation

- The earth receives majority of the neutrinos from the sun itself. For years' scientists were trying to figure out an anomaly between the observed and the theoretical data of the neutrinos observed.
- The studies held by the Super-Kamiokande detector in Japan showed that up to two thirds of number of neutrinos were missing in measurements performed on Earth.
- This was explained by the "metamorphosis" of the 3 neutrinos into one another called neutrino oscillation. This oscillation implies that Neutrinos have mass, however very small.

DARK MATTER & DARK ENERGY

Dark Matter

- It was in 1930s when Fritz Zwicky observed that many galaxies were moving faster than theoretical calculations. This implied that there was some mysterious gravitational pull towards the centre of those galaxies. The quantity of matter needed to exert such a pull far exceed the observed matter. This extra matter which invisible and undetected has been termed as Dark Matter.
- Gradually many astronomers started researching on dark matter. It was when the Andromeda Galaxy was observed to be moving faster than expected that dark matter took the centre stage of astronomical research.

Characteristics of Dark Matter

- It has not yet been observed yet directly. It doesn't interact with matter and is completely invisible to light and other forms of electromagnetic radiation making it impossible to detect.
- Scientists are confident it exists because of the gravitational effects it has on galaxies and galaxy clusters.
- The light from distant galaxies gets distorted and magnified by massive, invisible clouds of dark matter in the phenomenon known as **Gravitational Lensing**.
- There are 2 schools of thoughts on the existence of Dark Matter. While one school supports the idea of MACHOS (MAssive Compact Halo ObjectS) the other advocated WIMPS(Weakly Interacting Massive ParticleS).
- MACHOS are made up of Baryons(protons and neutrons) while WIMPS consists of Exotic particles which in turn are non-baryonic
- Dark matter responds to **2 of the Fundamental Forces**: Weak Nuclear Force and Gravitational Force.

Dark Energy: Roughly 68% of the universe is dark energy. it is a property of space so does not get diluted as space expands. As more space comes into existence, more of this energy-of-space appears. As a result, dark energy causes the universe to expand faster and faster.

Impacts of Dark matter and Dark Energy on Universe

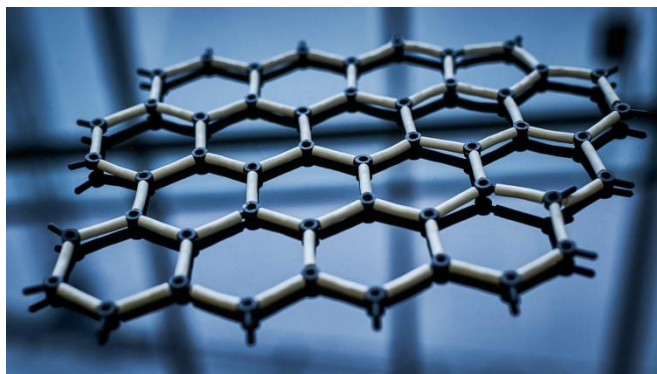
- While Dark matter exerts a “pull” on the universe, Dark Energy has a contrasting expansionary effect. As is evident, our universe is expanding, indicating that Dark Energy has a greater abundance than dark matter. By the laws of cosmology, the total amount of mass in the universe cannot increase. Hence while the amount of Dark matter remains constant, Dark Energy which is a property of space itself is bound to increase exponentially. Eventually, Dark energy would overcome the influence of dark matter and lead to further expansion of the universe.

✚ GEOGRAPHICAL INDICATION (GI)

- A geographical indication is a sign used on goods that have a specific geographical origin and possess qualities or a reputation **due** to that place of origin.
- India enacted the **Geographical Indications of Goods (Registration & Protection) Act, 1999** and came into force with effect from 15th September 2003.
- It helps in protection and increase in exports of a product. A geographical indication consists of the name of the place of origin of the goods.
- Under Articles 1(2) and 10 of the **Paris Convention for the Protection of Industrial Property**, geographical indications are covered as an element of IPRs. They are also covered under Articles 22 to 24 of the **Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement** of the WTO.
- **Difference between a Geographical Indication and a Trademark**
- A trademark is a sign used by a company to distinguish its goods and services from those produced by others. It gives its owner the right to prevent others from using the trademark.
- A geographical indication guarantees to consumers that a product was produced in a certain place and has certain characteristics that are due to that place of production. It may be used by all producers who make products that share certain qualities in the place designated by a geographical indication.

✚ GRAPHENE

- Graphene consists of a single layer of carbon atoms arranged in a hexagonal lattice, each atom bound to its neighbours by chemical bonds.
- The elasticity of these bonds produces resonant vibrations known as **phonons**.
- Graphene has been described as wondrous stuff — of being the strongest material ever tested, almost 300 times stronger than steel.
- It is also the best heat- and electricity-conducting material to be discovered.
- It could also become a valuable aid in filtering water.



Graphene has a number of properties which makes it interesting for several different applications such as:

- ✓ It is an ultimately thin, mechanically very strong, transparent and flexible conductor.
- ✓ Its conductivity can be modified over a large range either by chemical doping or by an electric field.
- ✓ The mobility of graphene is very high, which makes the material very interesting for **electronic high frequency applications**.
- ✓ Since graphene is a transparent conductor it can be used in applications such as touch screens, light panels and solar cells, where it can replace the rather fragile and expensive Indium-Tin-Oxide (ITO).

- ✓ Flexible electronics and gas sensors are other potential applications.
- ✓ New types of composite materials based on graphene with great strength and low weight could also become interesting for use in satellites and aircraft

✚ AMYOTROPHIC LATERAL SCLEROSIS (ALS)

- It is a group of **rare neurological diseases** that mainly involve the nerve cells (neurons) responsible for controlling voluntary muscle movement.
- It belongs to a wider group of disorders known as **motor neuron diseases**, which are caused by gradual deterioration (degeneration) and death of **motor neurons**.
- **Motor neurons** are nerve cells that extend from the brain to the spinal cord and to muscles throughout the body. These motor neurons initiate and provide vital communication links between the brain and the voluntary muscles.
- ALS is progressive, meaning the symptoms get worse over time. Currently, there is no cure for ALS and no effective treatment to halt, or reverse, the progression of the disease.
- It is also known as **Lou Gehrig's disease**, it causes lethal respiratory paralysis within several years of diagnosis.

✚ BROWN FAT

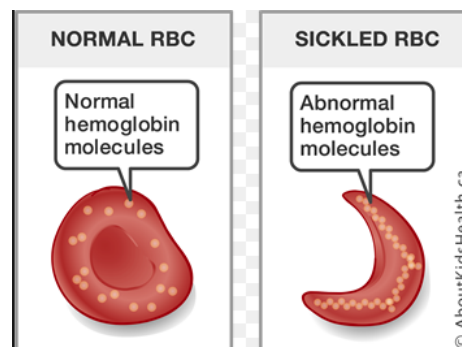
- **Brown adipose tissue (BAT) or brown fat** makes up the adipose organ together with white adipose tissue (or white fat).
- Brown adipose tissue is found in almost all mammals.
- It is especially **abundant in new-borns** and in **hibernating mammals**, also present and metabolically active in adult humans, but its prevalence decreases as humans age.
- Brown fat contains **many more mitochondria** than does white fat.
- These mitochondria are the “engines” in brown fat that burn calories to produce heat.
- Because of brown fat's ability to burn calories, scientists are looking for ways to **exploit its power to help fight obesity**.
- In adults exposed to cold temperatures, brown fat may serve as an ‘internal heating jacket’ to keep blood warm as it flows back to the heart and brain from our chilly extremities.
- Brown fat helps babies — who do not have the ability to shiver — to stay warm.
- It offers potential to combat the **Metabolic syndrome conditions**.
- **Metabolic syndrome conditions** is a cluster of conditions that includes -increased blood pressure, high blood sugar, excess body fat around the waist, and abnormal cholesterol or triglyceride levels — that occur together, increasing risk of heart disease, stroke and diabetes.

✚ EXOPLANET

- All of the planets in our solar system orbit around the Sun. Planets that orbit around **other stars are called exoplanets**. Exoplanets are very hard to see directly with telescopes. They are hidden by the bright glare of the stars they orbit.
- Scientists search for exoplanets by looking at the **effects these planets** have on the stars they orbit.
- One way to search for exoplanets is to look for **"wobbly" stars**. A star that has planets doesn't orbit perfectly around its centre. From far away, this off-center orbit makes the star look like it's wobbling.
- However, only big planets like Jupiter, or even larger can be seen this way. Smaller Earth-like planets are much harder to find because they create only small wobbles that are hard to detect.
- So **in 2009**, NASA launched a spacecraft called **Kepler** to look for exoplanets. Kepler looked for planets in a wide range of sizes and orbits. And these planets orbited around stars that varied in size and temperature.

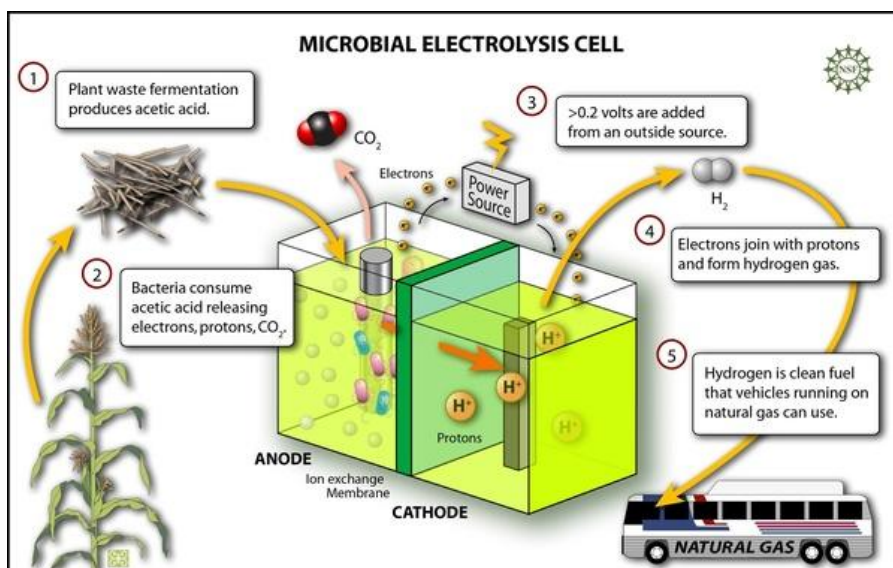
✚ SICKLE CELL ANAEMIA

- It is a major **genetic disease** that affects most countries in the **African Region**.
- In sickle cell disease, the normal round shape of red blood cells become like **crescent moons**.
- Round red blood cells can move easily through the blood vessels but sickled shaped cells interconnect and can result in **blood clots**.
- These blood clots can cause extreme pain in the back, chest, hands and feet.
- The disrupted blood flow can also cause damage to bones, muscles and organs.
- People with sickle cell disease often feel weak, tired and look pale.
- At the moment the only remedy available for the disease is a dangerous and expensive bone marrow transplant.
- **Regions:** In countries such as Cameroon, Republic of Congo, Gabon, Ghana and Nigeria the prevalence is between 20% to 30% while in some parts of Uganda it is as high as 45%.



MICROBIAL FUEL CELL

- The concept behind **microbial fuel cells** is that these rely on bacteria to generate an electrical current.
- These fuel cells have broad usage possibilities and are one of the **cleanest known energy sources**.
- Powered by living microorganisms with clean and sustainable features; they can generate electricity from broad range of organic substrates under natural conditions.
- Microbial fuel production is probably the only technology, in which the electricity is being generated from oxidation of organic compounds in room temperature.
- There is no need to burn anything, and the process is not depending on sunlight
- **Application**-MFC technology is unique because of its multifunctional application: for example, wastewater and slime, collected in wastewater treatment plants can be also used as food for bacteria.
- Although the idea that microorganisms can generate electricity was introduced in 1911, it became more actively investigated in the 2000s. Groups of researchers around the world are working with the MFC technology, attempting to improve the efficiency of the cells.
- **What about the Future?** It is envisaged that the microbial fuel cell (MFC) technology could one day be used in the Developing World in areas lacking sanitation and installed in homes in the Developed World to help clean waste before it flows into the municipal sewerage network, reducing the burden on water companies to treat effluent.



BIO-POLYMER

- It is a generic term used to describe a very **long molecule consisting of structural units and repeating units** connected by **covalent chemical bonds**.
- Modern polymers are very useful. For instance, they can be used as:

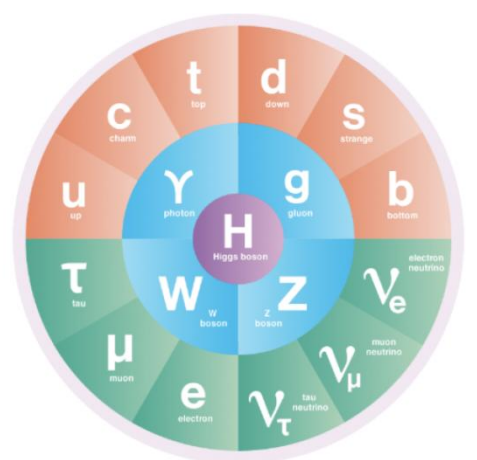
- ✓ New packaging materials;
- ✓ Waterproof coatings for fabrics (e.g. for outdoor clothing);
- ✓ Fillings for teeth;
- ✓ Dressings for cuts;
- ✓ Hydrogels (e.g. for soft contact lenses and disposable nappy liners);
- ✓ Smart materials (e.g. shape memory polymers for shrink-wrap packaging).

What is Bio-Polymer? It is a polymer that is developed from living beings. It is a biodegradable chemical compound that is regarded as the most organic compound in the ecosphere. The name “Biopolymer” indicates that it is a bio-degradable polymer.

- Some Biopolymer **examples are:** Proteins, Carbohydrates, DNA, RNA, Lipids, Nucleic acids, Peptides
- These polymers play an essential role in nature. They are extremely useful in performing functions like storage of energy, preservation and transmittance of genetic information and cellular construction.
- These polymers are carbon neutral and can always be renewed. These are sustainable as they are composed of living materials.
- Starch based biopolymers can be used for creating conventional plastic by extruding and injection moulding.

STANDARD MODEL OF PHYSICS

- The standard model identifies elementary particles into Quarks, Leptons and Bosons.
- **ANTIMATTER:** Every known matter has an antimatter which has the same mass and volume; only difference being the inherent charge. Antimatter has an opposite charge when compared to its matter. While the Antimatter of a proton is called **Anti-Proton**, the Antimatter of an electron is called **Positron**.



QUARKS

- Quarks are elementary particles propounded in the standard model.
- They join to form **hadrons**, such as protons and neutrons, which are components of the nuclei of atoms.
- The antiparticle of a quark is the **antiquark**.
- There are 6 principal quarks and hence 6 anti quarks.
- Quarks and antiquarks are the only two fundamental particles that interact through all four **fundamental forces of physics: gravitation, electromagnetism, and the strong interaction and weak interactions**.
- A quark exhibits confinement, which means that the quarks are not observed independently but always in combination with other quarks.
- This makes determining the properties (mass, spin, and parity) impossible to measure directly.

LEPTONS

- Like quarks, Leptons too are of 6 kinds. However, they do not have any fractional charge. The leptons are: ELECTRON, MUON, TAU and 3 Types OF NEUTRINOS

- Electron being a Lepton is a fundamental elementary particle.

- **FERMION**

- Fermions are particles which have half-integer spin and therefore are constrained by the **Pauli exclusion principle**.
- Particles with integer spin are called bosons. Fermions include electrons, protons, neutrons.
- Fermions include all quarks and leptons.
- The fact that electrons are fermions is foundational to the buildup of the periodic table of the elements since there can be only one electron for each state in an atom (only one electron for each possible set of quantum numbers).
- The fermion nature of electrons also governs the behavior of electrons in a metal where at low temperatures all the low energy states are filled up to a level called the Fermi energy.

- **BOSON:** Boson is a **collective name** given to particles that carry forces. It has been named after Indian scientist Satyendra Nath Bose. Gravity as a force of nature is yet not accepted by the Standard Model due to the failure to discover its Boson. Strong Nuclear Force is the strongest known force while gravity is the weakest.
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INDIAN POLITY

(Constitution; Polity and Governance)

CENTRAL ADMINISTRATIVE TRIBUNAL (CAT)

- Article **323A** of the Constitution provides that Parliament may by law establish an administrative tribunal for the Union and a separate administrative tribunal for each State or for two or more States for adjudication of disputes - with respect to recruitment and conditions of service of persons appointed to public services and posts – by Union, States, any local or other authority within the territory of India or under the control of the Government of India or of any corporation owned or controlled by the Government.
- **Article 323B** provides for constitution of Tribunal for other matters as provided by appropriate legislatures.
- **Article 323A and 323B** was added by Constitution **42nd Amendment**.
- Pursuant to **Article 323A**, the Parliament has enacted The Administrative Tribunals Act, 1985 which provides for establishment of Central Administrative Tribunal, State Administrative Tribunal and Joint Administrative Tribunal. The Joint Administrative Tribunal may be constituted for two or more States.

CAT- Composition

- The Central Administrative Tribunal shall consist of a Chairman and such number of Judicial and Administrative Members as decided by the Central Government.
- The Chairman and every other Member of the Central Administrative Tribunal shall be **appointed after consultation with the Chief Justice of India** by the President.
- The Chairman and every other Member of an Administrative Tribunal for a State shall be appointed by the President after consultation with the Governor of the concerned State.

Tenure

- The Chairman shall hold office as such for a term of **five years** from the date on which he enters upon his office. However, Chairman shall not hold office as such after he has attained the age of sixty-eight years.
- A Member shall hold office as such for a term of five years from the date on which he enters upon his office extendable by one more term of five years. No Member shall hold office after he has attained the age of sixty-five years.

Jurisdiction

- The Central Administrative Tribunal shall exercise all the jurisdiction, powers and authority in relation to
 - Recruitment and matters concerning recruitment, to any All-India Service or to any civil service of the Union or a civil post under the Union or to a post connected with defence or in the defence services.
 - All service matters concerning - a member of any All-India Service; or A person appointed to any civil service of the Union or any civil post under the Union; A civilian appointed to any defence services or a post connected with defence.

SIXTH SCHEDULE

Sixth Schedule deals with administration of tribal areas in state of Assam, Meghalaya, Tripura and Mizoram. The rationality behind the special arrangements in respect of only these four states lies in the following:

- The tribes in Assam, Meghalaya, Tripura and Mizoram **have their distinct culture** and have not assimilated much with rest of the society in these states.
- The tribal people in other parts of India have more or less adopted the culture of the majority of the people living in such states. However, the tribes in Assam, Meghalaya, Tripura and Mizoram, on the other hand, still have their roots in their own culture, customs and civilization.

- These areas are, therefore, treated differently by the Constitution and sizeable amount of autonomy has been given to these people for self-governance.

Administrative features under Sixth Schedule

- The tribal areas in the four states of Assam, Meghalaya, Tripura and Mizoram have been constituted as autonomous districts. But, they do not fall outside the executive authority of the state concerned.
- The **Governor** is empowered to organise and re-organise the autonomous districts. Thus, he can increase or decrease their areas or change their names or define their boundaries.
- If there are different tribes in an autonomous district, the governor can divide the district into several autonomous regions.
- Each autonomous district has a **district council** and each autonomous region also has a separate regional council.
- The district and regional councils administer the areas under their jurisdiction. They can make laws on certain specified matters like land, forests, canal water, shifting cultivation, village administration, inheritance of property, marriage and divorce, social customs and so on. But all such laws require the assent of the governor.
- The district and regional councils are empowered to assess and collect land revenue and to impose certain specified taxes.
- The acts of Parliament or the state legislature do not apply to autonomous districts and autonomous regions or apply with specified modifications and exceptions.

JOINT PARLIAMENTARY COMMITTEE

- There are two types of Parliamentary Committees in India:
- **Standing Committees:** Standing Committees are those which are elected by the House or nominated by the Speaker/Chairman every year or from time to time and are permanent in nature.
- **Ad Hoc Committees:** Ad Hoc Committees are those constituted by the House or by the Speaker/Chairman to consider and report on specific matters and expires as soon as they have completed their work on allocated matters.
- Joint Parliamentary Committee (JPC) is a kind of Ad Hoc Committee constituted for a specific purpose.
- The JPC is set up for a given period of time and is aimed at addressing a specific issue. Joint committees are set up by a motion passed in one house of Parliament and agreed to by the other. The details regarding membership and subjects are also decided by Parliament.
- JPC are generally constituted on the basis of consensus arrived between the government and the opposition to investigate specific issues.
- The mandate of a JPC depends on the specifics of motion presented in either House of Parliament. Thus, a JPC has a wider ambit and need not only be limited to the scrutiny of government finances.
- The committee's members are decided by Parliament.
- Number of members for a JPC is not fixed and may vary each time. In a JPC, number of Lok Sabha members are double than the Rajya Sabha members..
- A JPC is authorised to collect evidence in oral or written form or demand documents in connection with the matter which is being investigated.
- A JPC can obtain evidence of experts, public bodies, associations, individuals or interested parties suo motu or on requests made by them.
- If a witness fails to appear before a JPC in response to summons, his conduct constitutes Contempt of the House.
- The proceedings and findings of the committee are confidential, except in matters of public interest. The government can take the decision to withhold a document if it is considered prejudicial to the safety or interest of the State.

- The Speaker has the final word in case of a dispute over calling for evidence.
- JPC recommendations have persuasive value but the committee cannot force the government to take any action on the basis of the report.
- The government may decide to launch fresh investigations on the basis of a JPC report. However, the discretion to do so rests entirely with the government.
- The government is required to report on the follow-up action taken on the basis of the recommendations of the JPC and other committees.
- However, the opposition can always attack the government on the reports and recommendations made by the JPC in a particular case.

ELECTORAL SYSTEM

First Past the Post (FPTP) System	Proportional Representation (PR)
The country is divided into small geographical units called constituencies or districts	Large geographical areas are demarcated as constituencies. The entire country can also be a constituency.
Every constituency elects one representative	More than one representative may be elected from one constituency.
Voters vote for candidates	Voters vote for parties
A party may get more seats than votes in the legislature	Every party gets seats in the legislature in proportion to the percentage of votes that it gets
Candidates winning may not get majority of the votes i.e. [(50% + 1) of votes]	Candidates who wins the election gets majority of the vote
Examples; India, U.K	Example: Israel, Netherlands

MERITS OF FPTP	MERITS OF PR
<p>In FPTP, the whole country is divided into different geographical areas, i.e. constituencies, also called as territorial representation.</p> <p>Merits:</p> <ul style="list-style-type: none"> • Easy for the voters to understand the system due to low literacy scale in the country. • In parliamentary democracy, there is tendency of the system to multiply political parties. FPTP, therefore is conducive to such system. • Incurs low cost as compared to other systems such as Proportional Presentation • It provides close contacts between voters and their representatives. • Decreases the significance of party system and increases that of voter. 	<p>In simple terms, it is the system where a party is awarded the same percentage of seats in parliament as it gets votes at the polls and is comparatively complicated than FPTP.</p> <p>For e.g.: In case of 40% of the total votes, a perfectly proportional system would allow it to get 40% of the seats.</p> <p>Merits:</p> <ul style="list-style-type: none"> • All sections of people do get representation in proportion to their number. • Fear of majoritarianism is eliminated. • Conducive for New or Regional

- It gives scope for by-elections.

Parties.

MODEL CODE OF CONDUCT (MCC)

- Free and fair elections form the bed rock of democracy. This envisages a level playing field for the contestants and an equal opportunity for all parties for presenting their policies and programmes to voters. In this context MCC gains relevance as it intends to provide a level playing field for all political parties, keep the campaign fair and healthy, avoid clashes and conflicts between parties, and ensure peace and order.
- It aims to ensure that the ruling party, either at the Centre or in the States, does not misuse its official position to gain an unfair advantage in an election.
- MCC for guidance of political parties and candidates is a set of norms which has been evolved with the consensus of political parties who have consented to abide by the principles embodied in the said code and also binds them to respect and observe it in its letter and spirit.
- The salient features of the MCC lay down how political parties, contesting candidates and party(s) in power should conduct themselves during the process of elections i.e. on their general conduct during electioneering, holding meetings and processions, poll day activities and functioning of the party in power etc.
- In the case of **Union of India v Harbans Singh Jalal and Others**, the Supreme Court ruled that Code of Conduct would come into force the moment the Election Commission issues the press release, which precedes the notification by a good two weeks. Thus, the MCC remains in force from the date of announcement of elections till the completion of elections. It is applicable during Lok Sabha Elections, elections to State Legislative Assembly and also during by-elections.
- However, the MCC does not have statutory backing and it remains only guidelines to be followed during elections and to be executed by the Election Commission of India

CAG

- Article 148 of the Indian Constitution mandates the appointment of Comptroller and Auditor General of India by the President of India by warrant under his hand and seal and shall only be removed from office in like manner and on the like grounds as a Judge of the Supreme Court.
- The Comptroller and Auditor-General shall perform such duties and exercise such powers in relation to the accounts of the Union and of the States and of any other authority or body as may be prescribed by or under any law made by Parliament.
- Thus, the Parliament accordingly enacted the CAG's (Duties, Powers and Conditions of Service) Act, 1971. It specifies the CAG's duties and powers pertaining to government accounts, audit of receipts and expenditures of three tiers of the governments at the union, states and urban and rural local bodies.
- As per Article 151, the reports of the Comptroller and Auditor General of India relating to the accounts of the Union shall be submitted to the President, who shall cause them to be laid before each House of Parliament. The reports of the C&AG of India relating to the accounts of a State shall be submitted to the Governor of the State, who shall cause them to be laid before the Legislature of the State.
- Duties of C&AG includes audit of public companies, autonomous bodies, regulatory bodies and other public entities, where there is a specific legislative provision to make CAG audit mandatory in the acts by which these bodies were created.

INDEPENDENT CANDIDATE

- The eligibility criteria for independent candidates are same as that of other members from any political party who wish to contest elections either in Lok Sabha or in State Legislative Assembly. Thus, for Lok Sabha and State Legislative Assembly, the independent candidate must be a citizen of India and should not be less than 25 years of age.

- The nomination paper of an independent candidate must be subscribed by ten proposers who are also electors of the constituency. Under the Representation of the People Act 1951, this is mandatory for independent candidates and those candidates who belong to unrecognized political parties.
 - The law is little stricter for the independent candidates as candidates fielded by recognised political parties need to have only one proposer for their nomination.
 - The candidate contesting as independent is allowed to choose three free symbols listed by the Election Commission. Following which, they have to name them in order of preference and mention it in their nomination papers.
 - Preferences indicated in the nomination papers are taken into account and it's the Returning officer who finally assesses whether there is any other contender for the same symbol and then takes the call based on the rules declared in Election Symbols (Reservation and Allotment) Order, 1968.
- Under anti defection law: If a member has been elected as "Independent", then he / she would be disqualified if they join any political party after their election.
 - Views of Election Commission & Law Commission on independent candidates contesting polls
- The Election Commission has recommended in the past that only those independent candidates who have a previous record of winning local election should be allowed to contest for Parliamentary or Assembly elections.
 - The commission had also recommended doubling the security deposits for independent candidates to put a check on their proliferation and prevent malpractices in the election process because of their influx.
 - The Commission also had clearly advocated for barring independent candidates from contesting elections for a minimum of 6 years if they fail to secure at least five percent of the total number of votes cast in their constituencies.
 - It was also suggested that the independent candidate who loses election three times consecutively should be "permanently debarred" from contesting election.
 - On other hand law commission has recommended completely barring the independent candidates from contesting elections as they are either not serious or contest just to confuse electors.

JUDICIAL RESTRAINT

- Judicial Restraint is a theory of judicial interpretation that encourages judges to limit the exercise of their own power.
- It asserts that judges should hesitate to strike down laws unless they are obviously unconstitutional.
- The courts should hesitate to use judicial review to promote new ideas or policy preferences.
- In short, the courts should interpret the law and not intervene in policy-making.
- Judges should always try to decide cases on the basis of:

1. The original intent of those who wrote the constitution.
 2. Precedent – past decisions in earlier cases.
 3. The court should leave policy making to others.
- They "restrain" themselves from setting new policies with their decisions.
- They make decisions strictly based on what the Constitution says.

JUDICIAL ACTIVISM	JUDICIAL RESTRAINT
<ul style="list-style-type: none"> • Judicial activism is the interpretation of the constitution to advocate contemporary values and conditions. • When talking about the goals of judicial activism, it gives the power to overrule certain acts or judgments. For example, <i>the Supreme Court or an appellate court can reverse some previous decisions if they were faulty. This</i> 	<ul style="list-style-type: none"> • Judicial restraint is limiting the powers of the judges to strike down a law. • Judicial restraint helps in preserving a balance among the three branches of government, judiciary, executive, and legislative. In this case, the judges and the

judicial system also acts as checks and balances and prevents the three branches of government, judiciary, executive and legislative from becoming powerful. This means that Judicial activism has a great role in formulating social policies on issues like protection of rights of an individual, civil rights, public morality, and political unfairness.

- In Judicial activism, judges should look beyond the original intent of the framers (after all they were mere humans too and not infallible to making mistakes).

court encourage reviewing an existing law rather than modifying the existing law.

- In judicial restraint, the court should applaud all acts of the Parliament and the state legislature unless they are violating the constitution of the country.
- Judges should look to the original intent of the writers of the Constitution.

PRIVATE MEMBER BILL

- A Member of the Parliament who is not a Minister (i.e. not a member of the Government) is regarded as a Private Member. A Bill introduced in either house of Parliament by any such Member of Parliament is called a Private Members' Bill. Bills introduced by Ministers are called Government Bills.
- A Private Members' Bill is introduced in the Parliament by giving prior notice of one month along with a copy of the 'Statement of Objects and Reasons' wherein the Private Member explains her/ his rationale for the introduction of the Bill. The final order of introduction is decided by a ballot system to ensure fairness. On the day allotted for such Bills, the Speaker/ Chairman of the Lok Sabha/ Rajya Sabha calls out to individual Members who then introduce their Bills.
- There is also a Parliamentary Committee on Private Members' Bills and Resolutions which allots time to different Private Members' Bills and goes through all of them (particularly those seeking to amend the Constitution). It also helps in classifying these Bills based on their nature, urgency, and importance. This classification, in turn, determines which of the introduced Bills are discussed first.

LAW COMMISSION

- The Law Commission of India is a non-statutory body constituted by the Government of India from time to time. The Commission was originally constituted in 1955 and is re-constituted every three years.
- Constitution of India does not provide for creation of Law Commission of India and hence, it is not a constitutional body.
- It is constituted through a government order and hence, it is created through an executive order.
- The Reports of the Law Commission are considered by the Ministry of Law and Justice in consultation with the concerned administrative Ministries and are submitted to Parliament from time to time.
- The reports of Law Commission are cited in Courts, in academic and public discourses and are acted upon by concerned Government Departments depending on the Government's recommendations.
- After independence, the first law commission was constituted for a period of three years from 1955-1958 under the Chairmanship of Mr. M. C. Setalvad.
- It plays a crucial role—from suggesting new laws to changing outdated colonial laws and updating them to present times.
- Periodically, the Supreme Court also decides matters under Article 142 because of which changes need to be made. The Commission steps in then.
- India is also a signatory to many treaties under which we have statutory obligations which the Commission has worked to ensure.
- Occasionally, the Commission also takes up matters suo motu. For example, the 20th Commission worked on leprosy affected persons and their treatment in society, which it recognised as a human rights issue.
- The operating principle in the Commission's work is that our laws need to be dynamic, and cannot remain static.

NITI AAYOG

- The responsibilities of Niti Aayog are:

- To evolve a shared vision of **national development priorities**, sectors and strategies with the active involvement of States in the light of national objectives.
- To foster **cooperative federalism** through structured support initiatives and mechanisms with the States on a continuous basis, recognizing that strong States make a strong nation.
- To develop mechanisms to formulate credible plans at the **village level** and aggregate these progressively at higher levels of government.
- To ensure, on areas that are specifically referred to it, that the interests of **national security are incorporated in economic strategy and policy**.
- To pay special attention to the **sections of our society** that may be at risk of **not benefitting adequately from economic progress**.
- To design strategic and long term policy and programme frameworks and initiatives, and monitor their progress and their efficacy. The lessons learnt through monitoring and feedback will be used for making innovative improvements, including necessary mid-course corrections.
- To provide advice and **encourage partnerships** between **key stakeholders and national and international like-minded Think Tanks**, as well as educational and policy research institutions.
- To create a **knowledge, innovation and entrepreneurial support system** through a collaborative community of national and international experts, practitioners and other partners.
- To offer a platform for **resolution of inter-sectoral and inter-departmental issues** in order to accelerate the implementation of the development agenda.
- To maintain a **state-of-the-art Resource Centre**, be a **repository of research on good governance and best practices in sustainable and equitable development** as well as help their dissemination to stake-holders.
- To actively **monitor and evaluate the implementation of programmes and initiatives**, including the identification of the needed resources so as to strengthen the probability of success and scope of delivery.
- To focus on **technology upgradation** and **capacity building** for implementation of programmes and initiatives.
- To undertake other activities as may be necessary in order to further the execution of the national development agenda, and the objectives mentioned above
- To design a framework and mechanism for monitoring of the Scheduled Castes Sub-Plan and Tribal Sub-Plan.
- To evaluate the Scheduled Castes Sub-Plan and Tribal Sub-Plan.

GOVERNOR

- Articles 154 and 155 of the Constitution provide for the appointment of the Governor by the President as the executive head of the State.
- The President appoints the State Governor on the advice of the Prime minister with whom, the effective power lies.
- Seen as the lynchpin of the constitutional apparatus of the State, the office of the Governor has been pivotal in holding together the units of the federal polity.
- **Executive powers**-The Governor has the power to appoint the Council of Ministers including the Chief Minister of the state, the Advocate General and the members of the State Public Service Commission. Governor can nominate one member of Anglo-Indian community to legislative assemble of the state.
- **Legislative powers** - He has the right of addressing and sending messages, summoning, deferring and dissolving the State Legislature, just like the President has, in respect to the Parliament.

- **Judicial power**-The Governor can grant pardons, reprieves, respites or remission of punishments. He can also suspend, remit or commute the sentence of any person convicted of an offence against the law.
- **Emergency power** – On failure of constitutional machinery, the Governor informs the President about imposing Article 356 whereby either the state government is dismissed or suspended.
- According to Article 153 each state has a governor, but two or more states may have a common governor.
- According to Article 157 - A citizen of India who has completed the age of 35 years is eligible to be appointed as governor.
- The governor cannot be a member of a house of parliament, or of the state legislature.
- According to article 158(2), the governor cannot hold any other Office of Profit.
- The Governor holds office during the pleasure of the president according to Article 156(1).
- The importance of the Governor's position arises not from the exceptional circumstances that necessitate the use of his discretion, but as a crucial link within this federal structure in maintaining effective communication between the Centre and a State.
- As a figurehead he ensures the continuance of governance in the State, even in times of constitutional crises.
- His role is often that of a neutral arbiter in disputes settled informally within the various strata of government, and as the conscience keeper of the community.
- The Governor is neither a decorative emblem nor a glorified cipher.
- His powers are limited, but he has an important constitutional role to play in the governance of the state and in strengthening federalism.
- Article 200 requires him to reserve for the president's consideration any bill which in his opinion derogates from the powers of the High Court; to reserve any other Bill; to appoint Chief ministers of the state; Governor's responsibility for certain regions such as the Tribal Areas in Assam and other regions.

SPECIAL STATUS TO NORTH-EASTERN STATES

- **Article 371A: NAGALAND**- This provision was introduced in the Constitution by the **13th Amendment in 1962** in order to protect Naga culture and society after a 16-point agreement between the Centre and the Naga People's Convention in 1960. This agreement led to the creation of the state of Nagaland in 1963. Under **Article 371A, Parliament cannot legislate, without the concurrence of the Nagaland Legislative Assembly**, on Naga religion or social practices, Naga customary law and procedure, administration of civil and criminal justice involving decisions according to Naga customary law, and ownership and transfer of land and its resources.
The Article includes a provision for a **35-member Regional Council** for Tuensang district, which elects the Tuensang members in the Assembly. A member from the Tuensang district is Minister for Tuensang Affairs. The Governor has the final say on all Tuensang-related matters.
- **Article 371B: ASSAM**- Under this Article, introduced in the Constitution by the 22nd Amendment Act in 1969, the President may provide for the setting up of a committee of the state Assembly consisting of members elected from the state's tribal areas.
- **Article 371C: MANIPUR**- This provision was introduced by the 27th Amendment in 1971. The President may provide for the constitution and functions of a committee of elected members from the Hill areas of the state in the Assembly, and entrust "special responsibility" to the Governor to ensure its proper functioning. The Governor is required to file an annual report to the President.
- **Article 371F: SIKKIM**- The 36th Amendment Act, 1975 provides that the MLAs of Sikkim shall elect the representative of Sikkim in Lok Sabha. To protect the rights and interests of various sections of the state's population, Parliament may provide for the number of seats in the Assembly, which may be filled only by candidates from those sections. The Governor shall have "special responsibility for peace and for an equitable arrangement for ensuring the social and economic advancement of different sections of the population".

- **Article 371G: MIZORAM-** Under this provision, introduced by the 53rd Amendment in 1986, Parliament cannot make laws on “religious or social practices of the Mizos, Mizo customary law and procedure, administration of civil and criminal justice involving decisions according to Mizo customary law, ownership and transfer of land unless the Legislative Assembly by a resolution so decides”.
- **Article 371H: ARUNACHAL PRADESH-** Following the 55th Amendment, 1986, the Governor has a special responsibility with regard to law and order, and “he shall, after consulting the Council of Ministers, exercise his individual judgment as to the action to be taken”. Should a question arise over whether a particular matter is one in which the Governor is “required to act in the exercise of his individual judgment, the decision of the Governor in his discretion shall be final”, and “shall not be called in question.”

NATIONAL COMMISSION OF MINORITIES

- The setting up of Minorities Commission was envisaged in the Ministry of Home Affairs Resolution dated 12.01.1978 which specifically mentioned that, "despite the safeguards provided in the Constitution and the laws in force, there persists among the Minorities a feeling of inequality and discrimination.
 - In order to preserve secular traditions and to promote National Integration the Government of India attaches the highest importance to the enforcement of the safeguards provided for the Minorities and is of the firm view that effective institutional arrangements are urgently required for the enforcement and implementation of all the safeguards provided for the Minorities in the Constitution, in the Central and State Laws and in the government policies and administrative schemes enunciated from time to time. Sometime in 1984 the Minorities Commission was detached from Ministry of Home Affairs and placed under the newly created Ministry of Welfare.
 - With the enactment of the National Commission for Minorities Act, 1992, the Minorities Commission became a statutory body and renamed as National Commission for Minorities.
 - Religious communities viz; the Muslims, Christians, Sikhs, Buddhists, Jains and Zoroastrians (Parsis) were notified as minority communities
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ECONOMY

(Global and Indian)

APMC

- Agricultural Produce Market Committees (APMC) is the marketing boards established by the state governments in order to eliminate the exploitation incidences of the farmers by the intermediaries, where they are forced to sell their produce at extremely low prices.
- All the food produce must be brought to the market and sales are made through auction. The market place i.e. Mandi is set up in various places within the states. These markets geographically divide the state. Licenses are issued to the traders to operate within a market. The mall owners, wholesale traders, retail traders are not given permission to purchase the produce from the farmers directly.
- **Why APMC Act is Essential for Farmers?** The legislation of 1964 had undergone several modifications over the years to protect farmers against abuse and exploitations by middlemen at the time of price discovery, weighing and measurement of produces or while making payment after the transaction.
- Far-reaching changes were incorporated into the APMC Act such as creation of a revolving fund to implement the Floor Price Scheme to protect the interests of farmers, allowing contract farming companies to procure directly from farmers with a predetermined agreed price and so on. e-marketing initiative of the State Department of Agriculture Marketing is considered as a novel one and emulated by several States.
- **What is APMC Yard?** Agricultural Produce Market Committee (APMC) Yard / Regulated Market Committees (RMC) Yard is any place in the market area managed by a Market Committee, for the purpose of regulation of marketing of notified agricultural produce and livestock in physical, electronic or other such mode. The place shall include any structure, enclosure, open space locality, street including warehouse/silos/pack house/cleaning, grading, packaging and processing unit present in the Market Committee of the defined market area.
- **What is Minimum Support Price?** The minimum support price is an agricultural product price set by the Government of India to purchase directly from the farmer. This rate is to safeguard the farmer to a minimum profit for the harvest, if the open market has lesser price than the cost incurred.
- **What was the need of introducing MSP?** On the path of the Green Revolution, Indian policymakers realised that the farmers needed incentives to grow food crops. Otherwise, they won't opt for crops such as wheat and paddy as they were labour-intensive and didn't fetch lucrative prices. Hence, to incentivise the farmers and boost production, the MSP was introduced in the 1960s.

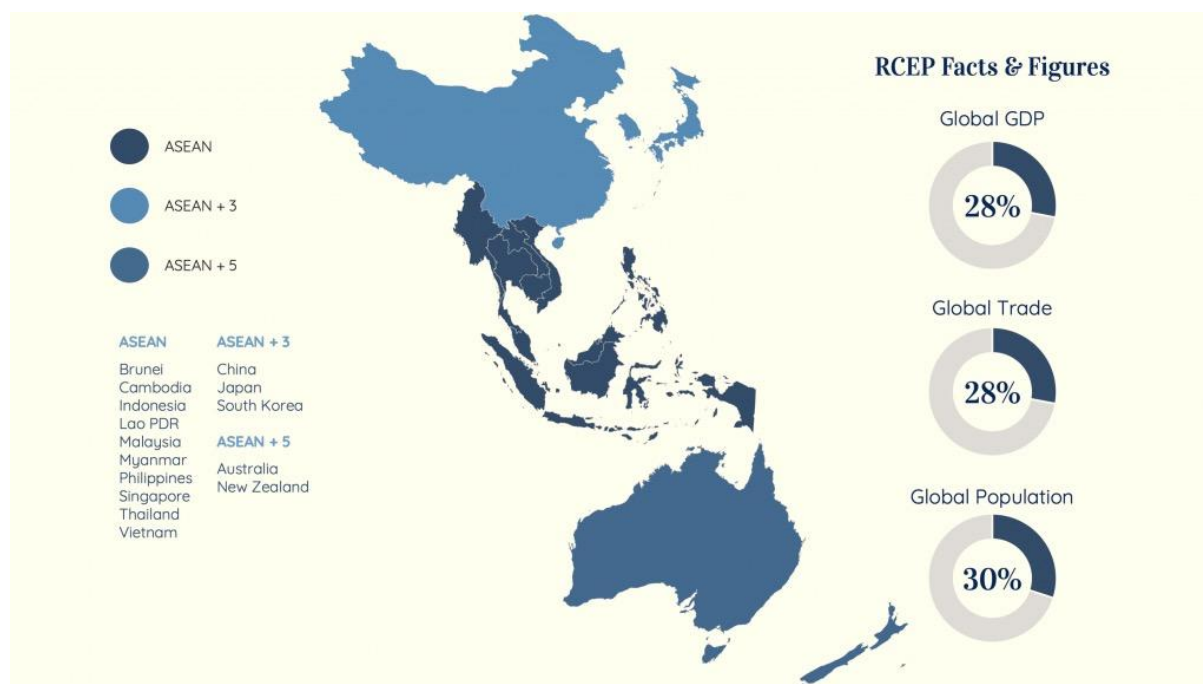
REGIONAL COMPREHENSIVE ECONOMIC PARTNERSHIP (RCEP)

- RCEP is a free trade agreement (FTA) between the ten member states of the ASEAN and the 5 Asia-Pacific states with which ASEAN has existing FTAs. (Australia, China, Japan, South Korea and New Zealand). RCEP covers trade in goods, services, investment, economic and technical cooperation, intellectual property, competition, dispute settlement and other issues.
- **Note:** India was also party to the RCEP negotiations. However, India pulled out later since its concerns were not addressed.

Benefits of India joining RCEP

- **Effective utilisation of FTAs:** RCEP provides an avenue for India to complement India's existing free trade agreements with the ASEAN and some of its member countries.
- **Greater Regional Integration:** Enable India to strengthen its 'Act East' Policy; quite important because India is not a party to two important regional economic blocs - Asia-Pacific Economic Cooperation and the Trans-Pacific Partnership.
- **Harness Comparative Advantage** in areas such as ICT, Education and Healthcare.

- **Attract Investment** from RCEP member countries
- Opportunities for Integration into **Global Value Chains (GVCs)**.



Challenges and Concerns with India's membership of RCEP

- **Adverse Trade Deficit:** India has around \$104 billion trade deficit with the RCEP member countries, which is 65% of India's total trade deficit. The RCEP agreement forced India to eliminate tariffs on almost 90% of the imported goods over the next 15 years. Hence, India was apprehensive that RCEP agreement would lead to increase in its trade deficit, particularly with countries such as China.
- **Adverse impact of previous FTAs:** The FTAs with Japan and South Korea have led to substantial increase in import of goods into the domestic market leading to adverse impact on domestic manufacturing.
- **Base Year for Eliminating Tariffs:** The RCEP member countries demanded that the base year should be 2013 while India demanded that the base year should be 2019. It is to be noted that India has increased import duties on several products between 2014 and 2019 and hence adoption of 2019 as the base year would have led to lower reduction in the customs duties and offered protection to the Indian Domestic Industry.
- **Ratchet Clause:** Ratchet means a screw which turns only in one direction, up or down and not both ways. This concept is proposed to be applied in RCEP which will disallow the member country to increase the import duties, once reduced. The Indian Government wanted the RCEP member countries to adopt safeguard mechanism which should enable the countries to increase the tariffs on certain products when there is a surge in imports. However, the RCEP member countries wanted that once the tariffs on products is raised, it should not be allowed to reduced.
- **Adoption of liberalized Rules of Origin** would have affected India's interests.
- **Application of Investors to State Dispute Settlement (ISDS) mechanism:** Under multilateral trade and investment agreements such as RCEP, a third party forum is normally provided for to resolve such disputes. This means that the relevant laws and judiciary in India will no longer be able to intervene in such disputes.
- **Provisions against Data Localization** in the e-commerce chapter in the RCEP goes against India's interests.

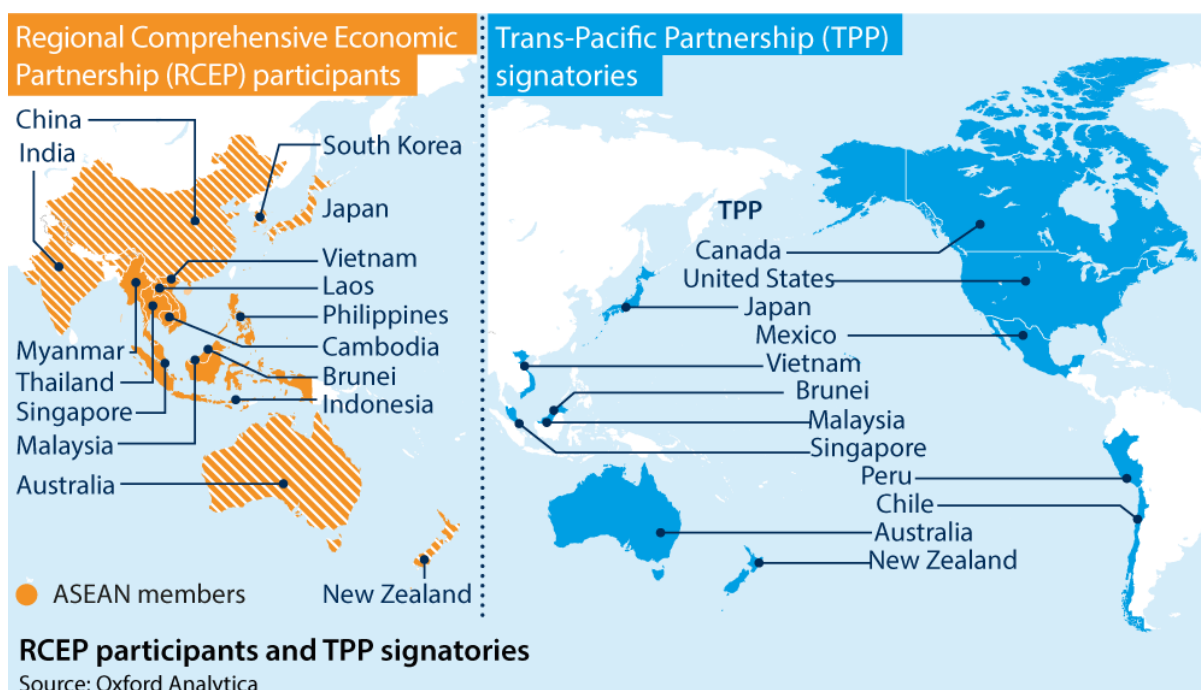
Strategic dimension of RCEP

‘Act East’ policy : There is inconsistency of some of our recent moves, with the ‘Act East’ policy –

- One, not joining RCEP.
- Two, at the latest East Asia Summit (EAS), only India and the U.S. were not represented at a summit level [India was represented by the External Affairs Minister].
- In the preceding Foreign Ministers’ meeting, our Minister of State was present, not the External Affairs Minister.

Greater influence of China:

- For China to be part and parcel of RCEP when it is not part of the Trans-Pacific Partnership [TPP] is a big thing. What it does is it formalises its economic network in this part of the world. When people are talking about re-shoring and looking at alternative supply chains, this ensures that will not have much traction.
- If we are looking at the TPP and a Biden administration in the U.S. perhaps coming back in some way, this becomes all the more important. You will have **a symmetric situation, with China being part of one trading arrangement with the U.S. out of it, and the U.S. part of one arrangement with China out of it.**
- That will leave India out in the cold.



Other strategic advantages:-

- Port building in Philippine etc.
- Leverage at international forum like WTO.
- Cooperation in dealing with black money, terrorism, extradition treaty etc.

Way Forward

1. **Firstly**, India has already signed FTAs with almost 12 countries which are part of RCEP. This includes 10 ASEAN Countries, Japan and South Korea. Hence, in the short-run, India can afford to remain outside RCEP until its core interests and concerns are addressed.
2. **Secondly**, the Surjit Bhalla Committee has highlighted that FTAs signed by India have been a mixed bag so far. While there has been an overall increase in trade with our partner countries after signing FTA, the imports have increased at much faster pace as compared to exports, leading to increase in Trade Deficit. Hence, the committee has recommended that India needs to undertake review of its FTAs so that its

interests and concerns are taken into account. The same goes even with the RCEP trade negotiations. India must continue to engage with the RCEP member countries in order to ensure that its core concerns are taken into account.

3. **Thirdly**, India has to realize that its track record of FTA utilization is quite poor at only around 25%. Hence, the Government must focus on enhancing its export competitiveness by addressing the infrastructural bottlenecks, build manufacturing capabilities, improving logistics supply chain, focus on R & D etc.

IMF

- The International Monetary Fund (IMF) is an organization of 190 countries, working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.
- Created in 1945, the IMF is governed by and accountable to the 190 countries that make up its near-global membership.
- The IMF's primary purpose is to ensure the stability of the international monetary system—the system of exchange rates and international payments that enables countries (and their citizens) to transact with each other. The Fund's mandate was updated in 2012 to include all macroeconomic and financial sector issues that bear on global stability.

Fast Facts About the IMF

1944

Year the IMF was established

\$1 trillion

Total amount the IMF is able to lend to its member countries

190

Member countries

34

Current lending arrangements

150

Nationalities represented by staff

76

Countries that received emergency financing during the pandemic

24

Executive Directors representing 190 member countries

0%

Interest rate on loans to low-income countries

\$303 million

For hands-on technical advice, policy-oriented training, and peer learning

CREDIT RATING AGENCIES

- A credit rating agency is an entity which assesses the ability and willingness of the issuer company for timely payment of interest and principal on a debt instrument. The Rating is denoted by a simple alphanumeric symbol, for e.g. AA+, A-, etc.
- The rating is assigned to a security or an instrument issued by a company.
- Ratings are based on a comprehensive evaluation of the strengths and weaknesses of the company fundamentals including financials along with an in-depth study of the industry as well as macro-economic, regulatory and political environment.

Issuer Pay Model

- Under this Model, the Issuer i.e. the company pays the money to the Credit rating agencies (CRAs) in order to get credit rating for the instruments issued by it.
- In order to enable the CRAs to give the credit rating, the company provides all the necessary details such as company's balance sheet and business details. Based upon a thorough and detailed analysis of such details, the CRA issues credit rating to the instrument issued by the company.

Investor Pay Model

- Under this Model, the investor is required to pay the money to the CRA in order to know the credit rating.
- Hence, only those investors who are ready to pay for a rating can access the credit rating of the instrument. The credit rating issued by the CRA is not commonly available to all the investors free of cost.

Regulator pay Model

- Under this model, the money is paid by the regulator in the country in order to get the credit rating.
- Either the company or the investor need not pay for the credit rating. The credit ratings would be made available to all the investors.

Moody's	S&P	Meaning
Investment Grade Bonds		
Aaa	AAA	Bonds of the highest quality that offer the lowest degree of investment risk. Issuers are considered to be extremely stable and dependable.
Aa1, Aa2, Aa3	AA+, AA, AA-	Bonds are of high quality by all standards, but carry a slightly greater degree of long-term investment risk.
A1, A2, A3	A+, A, A-	Bonds with many positive investment qualities.
Baa1, Baa2, Baa3	BBB+, BBB, BBB-	Bonds of medium grade quality. Security currently appears sufficient, but may be unreliable over the long term.
Non Investment Grade Bonds (Junk Bonds)		
Ba1, Ba2, Ba3	BB+, BB, BB-	Bonds with speculative fundamentals. The security of future payments is only moderate.
B1, B2, B3	B+, B, B-	Bonds that are not considered to be attractive investments. Little assurance of long term payments.
Caa1, Caa2, Caa3	CCC+, CCC, CCC-	Bonds of poor quality. Issuers may be in default or are at risk of being in default.
Ca	CC	Bonds of highly speculative features. Often in default.
C	C	Lowest rated class of bonds.
--	D	In default.

Issuer Pay Model	Investor pays model	Regulator pays model
<p>Advantages</p> <ul style="list-style-type: none"> • Ratings are available to the entire market free of charge and will highly aid the small investors. • It gives the rating agencies access to high-quality information that enhances the quality of analysis. <p>Disadvantages</p> <ul style="list-style-type: none"> • It can lead to serious conflict of interest since the CRAs are paid by the company to get the rating. The CRAs may inflate the rating to satisfy the company. 	<p>Advantages</p> <ul style="list-style-type: none"> • It would avoid the serious conflict of interest of the CRAs. • This would enable the investors to get the credit rating based on the true and actual financial condition of the company. <p>Disadvantages</p> <ul style="list-style-type: none"> • Ratings would be available only to those investors who can pay for them and takes ratings out of the public domain and thus affects the small investors. • The company may not always share all the necessary information with the 	<p>Advantages</p> <p>It eliminates the conflict of interest as seen in both Issuer Pay Model and Investor Pay Model.</p> <p>Disadvantages</p> <ul style="list-style-type: none"> • The problem with this model lies in the choosing the CRA and payment to be fixed. • The CRA chosen by the regulator may not be able to provide the best credit rating. Further, if the regulator pays less amount of money to

<ul style="list-style-type: none"> It may lead to 'Rating Shopping' which refers to the situations where an issuer approaches different rating agencies for the ratings and then choose to publish the most favourable ratings to disclose it to the public via media while concealing the lower ratings. 	<p>CRA's which then can have an adverse impact on the quality of the ratings.</p> <ul style="list-style-type: none"> It can pose serious conflict of interest involving the investors themselves. If investors are the payees, they can influence CRA's to give lower-than-warranted ratings to help them negotiate higher interest rates. 	<p>the CRA, the CRA may find it difficult to continue with its business and could have an adverse impact on the quality of the ratings issued.</p>
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GST Council

- Goods & Services Tax Council is a **constitutional body** for making recommendations to the Union and State Government on issues related to Goods and Service Tax.
- The Council makes recommendations to the Union and the States on important issues related to GST, like the goods and services that may be subjected or exempted from GST, model GST Laws, GST rates including the floor rates with bands, special rates for raising additional resources during natural calamities/disasters, special provisions for certain States, etc.
- Composition:** The GST Council is chaired by the Union Finance Minister and other members are the Union State Minister of Revenue or Finance and Ministers in-charge of Finance or Taxation of all the States. The GST council is assisted by the GST Secretariat and Secretary (Revenue) as the Ex-Officio Secretary to the GST Council.
- Quorum in Meeting:** One-half of the total number of Members of the Goods and Services Tax Council shall constitute the quorum at its meetings.
- Voting:**
 - Every decision of the Goods and Services Tax Council shall be taken by a majority of not less than three-fourths of the weighted votes of the members present and voting, in accordance with the following principles, namely: —
 - The vote of the Central Government shall have a weightage of one third of the total votes cast, and
 - The votes of all the State Governments taken together shall have a weightage of two-thirds of the total votes cast.

UNCONVENTIONAL MONETARY POLICIES

Zero Interest Rate Policy (ZIRP)	Negative Interest Rate Policy (NIRP)	Helicopter Money
<ul style="list-style-type: none"> This policy was followed in USA from 2008 in the wake of financial crisis in order to inject money into the economy to promote economic growth. Under this policy, the US Fed Bank provided loans to the banks at almost 0.25% rate of interest. The idea 	<ul style="list-style-type: none"> This policy was followed in developed economies such as Japan, Denmark, Sweden, Switzerland etc. Usually, the banks park their surplus reserves with the Central Bank and earn interest. However, under the NIRP, the 	<ul style="list-style-type: none"> The adoption of Helicopter money was contemplated by Japan in order to overcome the 2008 financial crisis. It is a hypothetical concept put forward by the economist, Milton Friedman. This involves the central bank of the country printing currency notes and distributing it to the people free of cost. The idea here is to promote

<p>was to transmit lower rate of interest to the corporates and borrowers in order to spur demand.</p> <ul style="list-style-type: none"> • This was also known as Quantitative Easing. 	<p>banks would be required to pay interest to the central bank if they park their surplus reserves.</p> <ul style="list-style-type: none"> • The idea here is that the banks should provide loans to the borrowers at cheaper rates instead of parking their surplus reserves with the Central Bank. 	<p>demand in the economy during recession.</p> <ul style="list-style-type: none"> • It is different from ZIRP and NIRP, as under these two the people get loans at cheaper rate which increases the debt liability. • But in helicopter money since people receive money free of cost, it does not lead to increase in debt liability.
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DISINVESTMENT

- Disinvestment refers to the mechanism in which the Government loses a part of its ownership of the PSUs through the sale of shares.
- The Disinvestment as a policy was adopted by the Government post 1991 LPG Reforms.
- The Department of Investment and Public Asset Management under the Ministry of Finance acts as the nodal agency for the Disinvestment in India.

Strategic Disinvestment

- According to the Department, strategic sale of a company has two elements:

- Transfer of a block of shares to a Strategic Partner; and
- Transfer of management control to the Strategic Partner.

- The strategic sale takes place when more than 51% of shares go to the private sector strategic partner. At the same time, it is not necessary that more than 51% of the total equity goes to the Strategic Partner for the transfer of management to take place. In other words, strategic sale can take place even if the private sector partner gets less than 51% shares.
- According to the strategic sale guidelines issued by DIPAM, after the transaction, the Strategic Partner may hold less percentage of shares than the Government but the control of management would be with partner.
- For instance, if in a PSU the shareholding of Government is 51% and the balance is dispersed in public holdings, then Government may go in for a 25% strategic sale and pass on management control, though the Government would post-transfer have a larger share holding (26%) than the Strategic Partner (25%).
- But the necessary condition is that the control of the firms should be with the strategic partner.

- **NITI Aayog**: Identifies CPSEs for Strategic Disinvestment; NITI Aayog advises on the mode of sale and percentage of shares to be sold; Core Group of Secretaries on Disinvestment (CGD) headed by Cabinet Secretary considers the recommendations of NITI Aayog; Decision by the Cabinet Committee on Economic Affairs (CCEA) on strategic disinvestment.

YIELD CURVE

- A yield curve is a graph that depicts yields (Interest rates) on bonds ranging from short-term debt such as one month to longer-term debt such as 30 years.
- Usually, in order to track the yield curve, the yields of the Government bonds are taken into consideration. The Yield curve may provide important clues related to present and future economic conditions in a country.

Types of Yield Curve and their interpretation

Normal Yield Curve

- The yields on the bonds depends upon the risk involved. Higher the risks, higher would be the yields.
- Normally, the yields on short term maturity bonds is lower than that of long term maturity bonds. The higher yields on the long term maturity bonds can be attributed to increased risk in the longer term (say 30 years). Hence, under normal conditions, the yield curve is upwards sloping.
- A normal yield curve indicates yields on longer-term bonds may continue to rise, responding to periods of economic expansion.

Inverted Yield Curve

- When there are signs of slowdown in an economy, it would mean that the economy faces risk in the short term. However, in the long term, the economy may come back to normalcy. Hence, due to this, the yield on the short term bonds becomes higher than the yields of long term bonds.
- This is because the risks associated with the short term bonds is higher than the risks associated with long term bonds. Hence, an inverted yield curve points towards a probable economic recession.
- The present development in the US bond market has raised concerns that the inverted yield curve possibly points to global economic recession in future.

WAYS AND MEANS ADVANCES

- The RBI acts as banker to the government i.e. it lends money to the Central and State Government. Earlier, the government relied on ad-hoc Treasury bills to borrow money from RBI. However, it was replaced by Ways and Means advances in 1997.
- Ways and Means advances **acts as a loan facility to the central and state governments** to meet their cash requirements. This facility is availed by the Government due to the temporary mismatches in their receipts and expenditure. The loan taken by the government through ways and means advances need to be paid back in 90 days. The interest rate of WMA currently is the repo rate. The limits for WMA are mutually decided by the RBI and Government of India.
- When the WMA limit is crossed the government takes recourse to overdrafts, which are not allowed beyond 10 consecutive working days. The interest rate on overdrafts would be 2 percent more than the repo rate.

Reasons for replacing Ad-Hoc T-Bills with WMAs

- Earlier, under an agreement between RBI and Government, the central government needed to always hold certain amount of cash balances. The minimum cash limit was fixed in order to ensure smooth conduct of Government business and to ensure that government has sufficient cash to meet its operational requirements.
- However, if the cash balances reduced to below the threshold level fixed, the RBI provided the cash through the creation of ad-hoc treasury bills. The ad hoc Treasury Bills, which were meant to be temporary, gained a permanent as well as a cumulative character. Further, ad-hoc treasury bills became an attractive source of financing Government expenditures since it was available at an interest rate which was below the market rate of interest.
- Thus, the ad-hoc treasury bills led to increase in the government borrowings leading to poor financial discipline.

Differences between ad-hoc Treasury Bills and WMA

- WMA would not be a source of financing Budget Deficit. It is only a mechanism to cover day-to-day mismatches in receipts and payments of the Government. WMA will also not be shown as a source of financing in the Budget estimates.

- Secondly, limits on WMA will be fixed and any excess withdrawal by Government beyond the limit will become permissible for not more than 10 consecutive working days.
- Thirdly, WMA will be charged at market related interest rate i.e. Repo rate.

WORLD BANK

- The World Bank is an international financial institution that provides loans to member countries of the purpose of economic growth and development.
- It comprises two institutions: The International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA).

- The structure of World Bank comprises:

- **Board of Governors:** The World Bank comprises of 189 member countries. Every member country is represented by its Minister for Finance. All these representatives of the member countries form the Board of Governors, which is the highest decision making body of the World Bank. They meet once in a year at the Annual Meetings of the Boards of Governors of the World Bank Group.
- **Board of Executive Directors:** The Board of Governors delegate specific duties to 25 Executive Directors, who work on-site at the Bank and are responsible for day-to-day management of the World Bank. The five largest shareholders of the World Bank appoint an executive director, while other member countries are represented by elected executive directors.
- **World Bank President:** The World Bank President chairs meetings of the Boards of Directors and is responsible for overall management of the Bank.

- **How is the World Bank President appointed?** The President of the World Bank is selected by the Board of Executive Directors for a five-year. As per the convention followed so far, the World Bank President has been an American Citizen, while the IMF President has been a European.

- **About World Bank Group:** The World Bank Group consists of five organizations:

1. **The International Bank for Reconstruction and Development (IBRD):** It lends loans to governments of middle-income and creditworthy low-income countries.
2. **The International Development Association (IDA):** It provides interest-free loans and grants to governments of the poorest countries.

Note: Together, IBRD and IDA make up the World Bank.

3. **The International Finance Corporation (IFC):** It is the largest global development institution focused exclusively on the private sector. It helps developing countries achieve sustainable growth by financing investment, mobilizing capital in international financial markets, and providing advisory services to businesses and governments.

Note: The International finance corporation has enabled investments into India through the launch of Masala Bonds.

4. **The Multilateral Investment Guarantee Agency (MIGA):** It promotes foreign direct investment into developing countries to support economic growth, reduce poverty, and improve people's lives. MIGA fulfills this mandate by offering political risk insurance (guarantees) to investors and lenders.
5. **The International Centre for Settlement of Investment Disputes (ICSID):** It provides international facilities for conciliation and arbitration of investment disputes. India is not a member of ICSID.

- **Reports published by World Bank:** 1. Doing Business Report; 2. Human Capital Index (HCI); 3. World Development Report; 4. Global Economic Prospects; 5. Logistics Performance Index; 6. Women, Business and Law.

MUTUAL FUNDS

- Mutual Fund Company pools money from the investors which in turn is invested in different financial instruments such as shares, bonds, debentures, commercial paper etc.
- A mutual fund is required to be registered with Securities and Exchange Board of India (SEBI) before it can collect funds from the public.
- **Types of Mutual Fund Schemes**
- A mutual fund scheme can be classified into open-ended scheme or close-ended scheme depending on its maturity period.
- An open-ended scheme is one that is available for subscription and repurchase on a continuous basis. These schemes do not have a fixed maturity period.
- On the other hand, a close-ended scheme has a stipulated maturity period e.g. 3-5 years. The fund is open for subscription only during a specified period at the time of launch of the scheme. Investors can invest in the scheme at the time of the new fund offer and thereafter they can buy or sell the units of the scheme on the stock exchanges where the units are listed.
- **What are Fixed Maturity Plans (FMPs)?**
- FMPs are close-ended mutual funds that one can invest in only during a new fund offer (NFO).
- The FMPs typically invest in debt instruments such as Bonds, commercial papers etc. that have the same maturity as that of the FMP. For example, if the duration of FMP is of 2 years, it would invest in only those debt instruments that have maturity period of 2 years.
- Because of such a nature of investment, the FMPs do not face interest rate risks. However, they face credit risks as there could be default on the payment by the company which issues the debt instrument.

CESS

- A cess is considered to be "Tax on tax". It is levied by the government for a specific purpose. Cess collected for a particular reason has to go towards the purpose for which it was charged. It cannot be used for, or diverted, to other purposes. For example, Health and Education Cess.
- It is to be noted that Krishi Kalyan Cess, Clean Environment Cess, Swachh Bharat Cess, Infrastructure cess have been subsumed under the GST through Taxation Laws Amendment Act 2017.
- Any tax collected goes into Consolidated Fund of India (CFI) which can be allocated for any purpose.
- However, Cess is a different form of tax and may initially get credited to the CFI but has to be ultimately used for the purpose for which it is imposed.
- In order to utilise the cess proceedings, the government has to create a dedicated fund. The proceeds of such funds are non-lapsable. Example: Prarambhik Shiksha kosh (Primary Education), Madhyamik and Uchchatar Shiksha kosh (Secondary and Higher Education),
- Further, unlike the normal taxes, Cess fund need not be shared by the Central Government with State Governments. Government also resorts to Cess as it is easy to introduce, modify and abolish compared to normal taxes as any change in normal tax need to go through a lot of procedures.

BIT

- Bilateral investment Treaties (BITs) are agreements between two countries for the reciprocal promotion and protection of investments in each other's territories by individuals and companies situated in either State. BITs encourage foreign investors to invest in a State and thereby contributing towards overall developments and advancements of the economy.

- **Important features of BIT:**

- **Fair and Equitable Treatment (FET):** Mandates States to have a stable and predictable legal framework regulating investments which meets the reasonable expectations of the investors.
- **Full Protection and Security (FPS):** Mandates States to provide full protection and safety to foreign investments.
- **National Treatment:** The foreign investors should be treated at par with the domestic investors.
- **Most Favourable Nation Treatment (MFN):** Concession extended to foreign investor of a particular country would be extended to foreign investors of other countries.
- **Expropriation (Taking over property):** Bars the state from expropriating the foreign investments except under exceptional circumstances.
- **Repatriation of Investment and Returns:** Mandates the states to provide unrestricted power to the foreign investors to repatriate their investments and returns.
- **Investor State Dispute Resolution (ISDS):** Foreign investors can directly initiate arbitration proceeding against a State without approaching its own government. To handle such a dispute, an ad-hoc tribunal may be set up in accordance with the Arbitration rules of the United Nations Commission on International Trade Law

PROVISIONING COVERAGE RATIO

- Under provisioning norms laid down by the RBI, banks are required to set aside certain percentage of funds in order to cover risk arising from NPAs.
- The provisioning amount is defined in terms of percentage of bad assets and depends upon the asset quality. The percentage of bad asset that has to be 'provided for' is called provisioning coverage ratio. For example, if the provisioning coverage ratio is 25% for a particular category of bad loans, banks have to set aside funds equivalent to 25% of those bad assets out of their profits.
- Provisioning coverage ratio differs in terms of the quality of assets. For NPAs categorized as "Loss assets", bank has to set aside 100% of such loss assets out of its profit.

CAPITAL ADEQUACY RATIO (CAR)

- The CAR has been laid down by the BASEL committee on banking supervision under Bank of International Settlement located in Basel, Switzerland.
- It has been laid down to ensure financial stability and to prevent failure of banks.
- So far, 3 BASEL Norms have been laid down: Basel I (1998), Basel II (2004), Basel III (2009).
- **CAR = (Tier-1 Capital + Tier-2 Capital) / RWAs * 100.**
- The Banks in India are required to maintain CAR of 9% (Tier-1 capital: 7% + Tier-2 Capital: 2%) along with Capital Conservation buffer (CCB) of 2.5%.
- Unlike the BASEL III norms, which stipulate capital adequacy of 10.5% (8%-CAR + 2.5% CCB), the RBI has mandated to maintain capital adequacy of 11.5% (9%-CAR + 2.5%-CCB).

APPRENTICESHIP

- Apprenticeship training refers to a course of training in any industry or establishment. Apprenticeship training consists of basic training (theoretical instructions) and practical training at an actual work place.
- Apprentices get an opportunity of undergoing 'on the job' training and are exposed to real working conditions.

- Apprentices become skilled workers once they have acquired the knowledge and skills in a trade or occupation, which help them in getting wage or self-employment.
- It has been provided under **Apprentices Act, 1961**. All the establishments having work force (regular and contract employees) of 40 or more are mandated to engage apprentices undertake Apprenticeship Programmes in a range from 2.5% -10% of their workforce (including contractual employees) every year.
- For establishments having a workforce between 6 and 40, engagement of apprentices is optional. Establishments having a workforce of 5 or less are not permitted to engage apprentices.

National Apprenticeship Promotion Scheme

- The government has launched the National Apprenticeship Promotion Scheme (NAPS) in 2016 to promote apprenticeship training and incentivize employers who wish to engage apprentices.
- NAPS has replaced Apprentice Protsahan Yojna (APY). While APY provided sharing of 50% of the stipend as prescribed by the Government only for the first two years, NAPS has provision for sharing of expenditure incurred in both providing training and stipend to the apprentice

BIMAL JALAN COMMITTEE

- **Composition of Economic Capital:** The committee has defined Economic capital as a combination of realized equity and revaluation reserves. The realised equity is the total realised profits of the RBI while the revaluation reserves is the unrealised and notional profits of the RBI which may arise from changes in the valuation of Gold, Foreign Currency or foreign securities.
- **Purpose of Economic Capital:** The Committee has stated that realised equity could be used for meeting all risks and losses, while revaluation balances could be treated as risk buffers against market risks.
- **Adequacy of Economic Capital:** The realised equity should be maintained at within a range of 6.5 per cent to 5.5 per cent of the RBI's balance sheet, comprising 5.5 to 4.5 per cent for monetary and financial stability risks and 1.0 per cent for credit and operational risks. Further, any shortfall in revaluation balances would add to the requirement for realized equity.
- **Transfer Policy:** The Committee has stated that the surplus distribution policy must take into the account the total realised equity. Only if realized equity is above its requirement (6.5 per cent to 5.5 per cent), the entire net income should be transferable to the Government. If it is below the lower bound of requirement, risk provisioning will be made to the extent necessary and only the residual net income should be transferred to the Government.

DEVELOPMENT BANKS

- As the name suggests, these banks are specialised financial institutions that are set up so as to promote the socio-economic development in a country. These Banks provide long term credit at concessional rates to certain critical sectors such as Agricultural, Infrastructure, Industries etc.
- Most of the advanced economies such as USA, UK, Japan etc. had set up development banks in the past which enabled them to attain higher growth momentum. On similar lines, China has also set up development banks in the field of agriculture and Trade so as to promote growth and development.
- Some of the development Banks in India include NABARD (Agriculture and Rural Development), Industrial Finance Corporation of India (Industrial Development), SIDBI and MUDRA (MSME Development), EXIM Bank (Trade Development), National Housing Bank (Housing Infrastructure).

Difference between development banks and commercial banks

- **Source of Funds:** The Commercial Banks are majorly dependant on the depositors' money for extending funds while the development Banks are dependent on the Government's financial support.

- **Nature of Loans:** The Commercial Banks extend short-term loans while the development Banks extend long-term loans.
- **Nature of Role:** The role of the commercial banks is confined to the extension of loans while the role of development banks is much more multidimensional. The Development Banks also offer various kinds of assistance to the companies such as identification of projects for undertaking investment, ensuring that the companies invest in financially viable projects, offering managerial assistance for the execution of projects etc.

Nature of Assistance provided by the Development Banks: The Development Banks may offer the following kinds of assistance to the companies:

- Extend long term finance at concessional rates to the companies.
- Subscribe/buy the shares of the companies which are involved in financing of infrastructure, industrial or housing projects
- Partial Credit Guarantee on the repayment of the bonds issued by the companies. This means that if the company issuing the bond defaults on its payment, the Development Bank would repay back a certain amount of money to the investors. This is known as **Credit Enhancement**. Such kind of guarantee on the repayment of loans reduces the risk enabling the companies to borrow money at lower rates of interest.

Benefits of Development Banks

- **Meet Investment Needs:** The Government has set a vision to realise \$ 5 trillion by the end of 2024-25. In this regard, the Economic Survey has recommended that Indian economy has to shift gears from consumption expenditure to Investment, wherein the private sector investment should become the main engine of growth of Indian Economy. The setting up of the development Banks would boost the credit creation in the economy leading to higher investment by the private sector.
- **Reduce Pressure on Commercial Banks:** The Financial System in India is not diversified and it is basically dominated by the Indian Banks. The Banks have mainly relied on short-term deposits for lending to long term infrastructural projects leading to Asset-Liability Mismatch and higher NPAs. The developed economies have diversified financial market consisting of Banks (for meeting short-term credit requirements) and bond market (for meeting long term credit requirements). The setting up of development Banks would deepen the bond market (through credit enhancement) and reduce pressure on the commercial banks leading to diversified financial market.
- **Lower Cost of Capital:** As stated before, the credit enhancement provided by the development Banks would enable the companies to raise loans at lower rates of interest leading to decrease in the cost of capital.
- **Reduce Foreign Currency Exposures:** Presently, some of the Infrastructural and housing finance companies borrow loans from overseas market. The depreciation in the value of Rupee may put additional burden on them and expose them to fluctuations in the exchange rate. The development banks would enable these companies to raise loans in the domestic market and reduce the foreign currency exposure.

SOCIETY

(Social Issues and Social Justice)

SELF HELP GROUPS

- Self-Help Group (SHG) is a small voluntary association of poor people, preferably from the same socio-economic background.
- They come together for the **purpose of solving their common problems through self-help and mutual help**. The SHG **promotes small savings** among its members.
- The savings are kept with a bank. This common fund is in the name of the SHG. SHG is a group formed by the community, which has specific number of members like 15 or 20. Usually, the number of members in one SHG does not exceed twenty.
- The SHG shouldn't have more than one member from a particular family. This allows the inclusion of many families.
- In such a group, the poorest would come together for emergency, disaster, social reasons, economic support to each other have ease of conversation, social interaction and economic interactions.
- NABARD introduced **SHG-Bank Linkage Programme in 1992-1993** as a microfinance innovation.
- SHGs have been an effective mechanism for poor women in the rural areas who usually are unbanked.

Functions of the SHGs

- **Initiate and maintain savings within the group:** All members must regularly save at least a small amount. These savings allow them to get future credits for their group.
- **Lending loans to the members:** The savings made by the SHG must be used to provide loans to members of the group. Everything related to the loan must be decided within the group.
- **Solving common problems:** SHGs mostly consist of individuals who face similar problems. The grouping should essentially help the individual overcome these problems through discussions and interactions within the group and overcoming the problems and finding a common and united solution to the problems.
- **Bank Loans:** SHGs must work on getting a collective guarantee system so that they can avail loans from official sources.

Advantages of SHGs

- **Combating social evils:** The SHGs play a crucial role in overcoming social evils like alcoholism, drug addiction, gambling, etc.
- **Women empowerment:** Women SHGs make its members independent from social constraints and allow them to make independent decisions. They can even actively participate in the gram sabha.
- **Active participation in democracy:** SHGs can actively participate in the aspects of local governance. This would mean the inclusion of weaker and marginalised sections of the society in the local governance.
- **Increase employment opportunities in rural India:** It allows for micro-level entrepreneurship within the rural society and reduces too much dependence on agriculture.
- **Easier access to government schemes:** The government schemes are mostly meant for the marginalised sections of the society. The inclusion and identification of these people are highly difficult. If they are grouped together, it is easier for the government to identify those who are in need of assistance quickly and efficiently. It also prevents the exploitation and corruption of the government at the ground level.
- **Improves the standard of living:** The collective team effort by the SHGs for financial inclusion allows for the improvement in the living standard, family planning, healthcare, of the vulnerable sections of the society.
- **Financial discipline:** The members of the SHGs are encouraged to open savings accounts in banks. This assures improved living conditions, increased spending on education, health, etc.

Limitations of SHGs

- **Too much dependence on government and NGOs:** Many SHGs are dependent on the promoter agencies for their survival. In case these agencies withdraw their support, the SHGs are vulnerable to downfall.
- **Lacks qualified facilitator:** The facilitators do not have professional training with regards to organising SHGs.
- **Lacks up-gradation of skills:** Most SHGs are not making use of new technological innovations and skills. This is because there is limited awareness with regards to new technologies and they do not have the necessary skills to make use of the same. Furthermore, there is a lack of effective mechanisms that promote skill developments in rural areas.
- **SHGs are run by non-professionals:** There is no professionalism within the SHGs. This does not promote the expansion and improvement of the SHGs. This does not allow for the increase of wages of the members and improvement in their living conditions. This also leads to error in accounting and mismanagement of the funds.
- **Lacks security:** SHGs are mostly not registered. They are run based on the trust between the members. The savings made by the SHG members may not be safe, which brings in the mistrust between the members.

ASSISTED REPRODUCTIVE TECHNOLOGY (ART)

- Assisted reproductive technology (ART) is used to **treat infertility**. It includes fertility treatments that handle both a woman's egg and a man's sperm. It works by removing eggs from a woman's body. The eggs are then mixed with sperm to make embryos. The embryos are then put back in the woman's body. **In vitro fertilization (IVF)** is the most common and effective type of ART.
- ART procedures sometimes use donor eggs, donor sperm, or previously frozen embryos. It may also involve a surrogate or gestational carrier. A surrogate is a woman who becomes pregnant with sperm from the male partner of the couple. A gestational carrier becomes pregnant with an egg from the female partner and the sperm from the male partner.
- The most **common complication of ART is a multiple pregnancy**. It can be prevented or minimized by limiting the number of embryos that are put into the woman's body.

Assisted Reproductive Technology Regulation Bill, 2020

- India has become one of the major centres of this global fertility industry, with reproductive medical tourism becoming a significant activity. Clinics in India offer nearly all the ART services—gamete donation, intrauterine insemination (IUI), IVF, gestational surrogacy etc. However, in spite of so much activity in India, there is yet no standardisation of protocols and reporting is still very inadequate.
- The need to regulate the Assisted Reproductive Technology Services is mainly to **protect the affected Women and the Children from exploitation**. The oocyte (*a cell in an ovary which may undergo meiotic division to form an ovum*) donor needs to be supported by an insurance cover, protected from multiple embryo implantation and children born through Assisted reproductive technology should be provided all rights equivalent to a Biological Children. The cryopreservation of sperm, oocytes and embryo by the ART Banks needs to be regulated and the bill intends to make Pre-Genetic Implantation Testing mandatory for the benefit of the child born through assisted reproductive technology.
- Thus, the bill makes **provisions for safe and ethical practice of assisted reproductive technology services** in the country. Through the bill, the National Board, the State Boards, the National Registry and the State Registration Authorities respectively will regulate and supervise assisted reproductive technology clinics and assisted reproductive technology banks.

SEX SELECTION

- Sex selection is the elimination of unwanted daughters (or sons) through preconceptional, prenatal, or postnatal means.
- **Preconceptional means** of sex selection include selective in vitro fertilization (IVF) methods including sperm sorting.
- **Prenatal means** include sex-selective abortion and destruction of female embryos conceived through IVF.
- **Postnatal sex selection** includes female infanticide or neglect.
- Due to cultural biases against women, parents often give daughters lower priority than sons when allocating food, immunization, or providing access to health care. As a result, girls in many patriarchal societies suffer disproportionately higher mortality rates than they would if gender bias did not exist.

What is sex-selective abortion?

- Sex-selective abortion is the abortion of a preborn child simply because the child's sex was not what the parents wanted.
- In countries where culturally-rooted son preference is common, sex-selective abortion is used as a means to attain a couple's desired number of sons and desired family composition. Sex-selective abortion constitutes violence against women and is a serious violation of the fundamental rights and equal dignity of women.

What are the causes of sex-selective abortion in India?

1. Son Preference - Throughout much of India, sons are often valued to carry on the family name and receive inheritance. According to traditional Hindu custom, important religious rituals such as the lighting the funeral pyre must be performed by a son to assure that parents have a good afterlife. Sons also provide parents with the assurance that they will be cared for—physically, emotionally, and financially—in sickness and old age.

Daughters, on the other hand, are often seen as a burden and a net financial loss. Although illegal, the practice of dowry is still common in India, and couples will often spend a substantial amount of their savings on their daughter's dowry. Moreover, marriage in India is typically patrilocal. Upon marriage, women become part of their husband's family and lineage and typically care for their husband's parents in old age, leaving sonless couples with little support from their children in old age.

2. Declining Fertility - In recent decades, the number of children couples have in India has declined considerably. While women in India in 1970 had about 5.6 children on average, by 2018, women in India were on average having about 2.3 children over their lifetimes. Couples today also desire fewer children than they did only a few decades ago. The fact that couples are having fewer children means they have fewer opportunities to try for a son. Many couples seeking to attain their desired number of sons, while also limiting the total number of children they have, often resort to sex-selective abortion to achieve their desired family composition.

3. Unequal Status of Women - At its root, sex-selective abortion arises from discriminatory attitudes towards women and inequality between women and men in India. Women in India are often denied equal access to health care and education and are often excluded from decision-making in the family. Women in India suffer disproportionately higher mortality rates than would be expected for a country of similar socioeconomic development. Cultural biases often exclude women from inheritance rights and equal pay in employment. Women are often coerced or forced into selectively aborting their daughters by relatives or spouses. Studies have shown that men and women with gender equitable attitudes are significantly less likely to have a strong preference for sons.

4. Accessibility of Ultrasound Technology and Abortion - Ultrasound is widely available and accessible across India and the cost of an ultrasound scan is affordable for most Indian citizens. In India, it is illegal to determine

the sex of an unborn child. Prenatal sex determination is a lucrative business, however. Despite its illegality, the prenatal sex determination via ultrasound is still practiced in many parts of the country.

Abortion is also widely available and easily accessible in India. Abortion has been legal in India since 1974 when the Medical Termination of Pregnancy Act legalized abortion.

SEXUAL HARASSMENT OF WOMEN AT WORKPLACE (PREVENTION, PROHIBITION AND REDRESSAL) ACT, 2013

It seeks to protect women from sexual harassment at their place of work. The Act came into force from 9 December 2013. This statute superseded the Vishaka Guidelines for Prevention of Sexual Harassment (POSH) introduced by the Supreme Court (SC) of India. The major features of the act are:

- The Act defines sexual harassment at the work place and creates a mechanism for redressal of complaints. It also provides safeguards against false or malicious charges.
- The Act also covers concepts of 'quid pro quo harassment' and 'hostile work environment' as forms of sexual harassment if it occurs in connection with an act or behaviour of sexual harassment.
- The definition of "aggrieved woman", who will get protection under the Act is extremely wide to cover all women, irrespective of her age or employment status, whether in the organised or unorganised sectors, public or private and covers clients, customers and domestic workers as well.
- An employer has been defined as any person who is responsible for management, supervision, and control of the workplace and includes persons who formulate and administer policies of such an organisation.
- While the "workplace" in the Vishakha Guidelines is confined to the traditional office set-up where there is a clear employer-employee relationship, the Act goes much further to include organisations, department, office, branch unit etc. in the public and private sector, organized and unorganized, hospitals, nursing homes, educational institutions, sports institutes, stadiums, sports complex and any place visited by the employee during the course of employment including the transportation. Even non-traditional workplaces which involve tele-commuting will get covered under this law.
- The Committee is required to complete the inquiry within a time period of 90 days. On completion of the inquiry, the report will be sent to the employer or the District Officer, as the case may be, they are mandated to take action on the report within 60 days.
- Every employer is required to constitute an Internal Complaints Committee at each office or branch with 10 or more employees. The District Officer is required to constitute a Local Complaints Committee at each district, and if required at the block level.
- The Complaints Committees have the powers of civil courts for gathering evidence.
- The Complaints Committees are required to provide for conciliation before initiating an inquiry, if requested by the complainant.
- The inquiry process under the Act should be confidential and the Act lays down a penalty on the person who has breached confidentiality.
- The Act requires employers to conduct education and sensitisation programmes and develop policies against sexual harassment, among other obligations. The objective of Awareness Building can be achieved through Banners and Poster displayed in the premises, eLearning courses for the employees, managers and Internal Committee members, Classroom training sessions, Communication of Organizational Sexual Harassment Policy through emails, eLearning or Classroom Training. It is recommended that the eLearning or Classroom Training be delivered in the primary communication language of the employee.
- Penalties have been prescribed for employers. Non-compliance with the provisions of the Act shall be punishable with a fines. Repeated violations may lead to higher penalties and cancellation of licence or deregistration to conduct business.

- Government can order an officer to inspect workplace and records related to sexual harassment in any organisation.
- Under the Act, which also covers students in schools and colleges as well as patients in hospitals, employers and local authorities will have to set up grievance committees to investigate all complaints.

MANUAL SCAVENGING

- Manual scavenging refers to any practice that involves physically removing human excrement from dry toilets with bare hands, brooms and metal scrappers.
- In Indian contexts manual scavengers include toilet cleaners and caretakers in domestic, public and institutional settings, those who work at faecal waste treatment and disposal sites, those who empty pits and septic tanks and other faecal sludge handlers who clean sewer and manholes.
- Most deaths related to manual scavenging occur on account of asphyxiation due to poisonous gases particularly carbon monoxide poisoning.
- Human faeces and urine carry a number of pathogens including Hepatitis A, E. coli, Rotavirus, Norovirus, and pinworms.
- Repeated handling of human excreta without protection leads to respiratory and skin diseases, anaemia, jaundice, trachoma etc.

Steps to curb Manual Scavenging

- **The Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act 1993** was enacted to ban manual scavenging in India which prohibited employing workers as a criminal offence.
- However, given that manual scavenging is a caste-based profession it continued to be rampant in India.
- Thus in order to extend wider protection to manual scavengers The Prohibition of Employment of Manual Scavengers and Their Rehabilitation Act was enacted in 2013.
- The act intends to eliminate insanitary latrines completely and prohibit employment as manual scavengers and hazardous manual cleaning of sewers and septic tanks.
- Every offence under this Act shall be cognizable and non-bailable.

Supreme Court Directive on Manual Scavenging

- In 2014, a three-judge SC Bench directed all the States to abolish manual scavenging in all forms and take steps for rehabilitation of manual scavengers.
- Accordingly, the court instituted a compensation of Rs. 10 lakh for families of persons who die due to manual scavenging.
- Besides the apex court has also directed the railways to take time-bound strategy to end manual scavenging on the tracks.

Need for the survey

- India being a caste-based society has witnessed the problem of manual scavenging as a caste-based profession from time immemorial.
- For the 1st time in 1993, an act was enacted to ban manual scavenging in India.
- While manual scavenging was rampant in India, it was grossly under-reported.
- To solve the problem of under-reporting, the definition of manual scavenging was widened by The Prohibition of Employment of Manual Scavengers and Their Rehabilitation Act, 2013. However, even after this there is under-reporting of manual scavengers in India.

SECURITY

(Internal and External)

CCIT

- Comprehensive Convention on International Terrorism (CCIT) was introduced by India in the United Nations General Assembly in 1996.
- CCIT intends to develop a universal definition of terrorism, to ban all terrorist groups and to make cross-border terrorism an extraditable offence.
- India has been pushing for the CCIT to be adopted at all major meets such as of BRICS, G4, among others.
- This convention has been opposed mainly from three blocks; the US, the Organization of Islamic Countries (OIC), and the Latin American countries. All three have an objection over the definition of terrorism, apart from their own strategic interests.

BILATERAL FRAMEWORK FOR SECURITY COOPERATION

- It is framework for security cooperation to reflect the deepening and expanding security and defence engagement between India and Australia, and to intensify cooperation and consultation between Australia and India in areas of mutual interest. The Framework is being implemented in accordance with the Action Plan below:

- Annual Summit and Foreign Policy Exchanges and Coordination;
- Defence policy planning and coordination;
- Counter-terrorism and other Transnational Crimes;
- Border Protection, Coast Guard, and Customs;
- Disarmament, Non-proliferation, Civil Nuclear Energy and Maritime Security;
- Disaster management and peacekeeping;
- Cooperation in Regional and Multilateral Fora.

AUSTRALIA GROUP

- The Australia Group is an informal arrangement which aims to allow exporting countries to minimise the risk of assisting in **chemical and biological weapon (CBW) proliferation**.
- The annual meetings of AG are held in Paris, France.
- The **principal objective** of Australia Group participants' is to use licensing measures to ensure that exports of certain chemicals, biological agents, and dual-use chemical and biological manufacturing facilities and equipment, do not contribute to the spread of CBW.
- Participants also observe strict adherence to the 1925 Geneva Protocol, the 1972 Biological and Toxin Weapons Convention (BWC) and the Chemical Weapons Convention (CWC).
- Thus all states participating in the Australia Group are parties to the Chemical Weapons Convention (CWC) and the Biological Weapons Convention (BWC)
- A revitalised Indian maritime grand strategy will certainly provide New Delhi a lot more space for manoeuvre in the region and message Beijing that its Himalayan adventure could become costly for it.
- India became member in 2018.

WASSENAAR ARRANGEMENT

- The agreement to establish the Wassenaar Arrangement was reached in 1995, and the Wassenaar Arrangement became operational after the adoption of the Initial Elements in 1996.

- The Initial Elements establish the foundations of the 1995 Wassenaar Arrangement agreement and states its purpose, scope and modalities.
- It also constitutes the basic mechanism of information exchange on transfers of conventional weapons and dual-use goods and technologies.
- The Wassenaar Arrangement has been established in order to contribute to regional and international security and stability by promoting transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies.
- It intends to complement and reinforce the other export control regimes for weapons of mass destruction and their delivery systems and uses export controls as a means to combat terrorism.
- India became member in 2017.

BLUE WATER FORCE

- A Blue Water Navy is one that has the capacity to project itself over a much bigger maritime area than its **maritime borders**.
- It is able to carry out operations far from its borders, without being required to return to its home port to refuel or re-stock.
- Blue Water navies belong to the most powerful nations like USA etc., yet there is no one internationally agreed upon definition.
- However, according to the **Indian Maritime Doctrine, 2015**, “The ability to undertake distant operations distinguishes a blue-water navy from a brown-water force. It requires strong integral capacity, including logistics, surveillance, networked operations, etc., and enabling capability, including equipment design, training, doctrine and organisation.”
- As the Indian Navy has the capacity to carry distant operations “at or from the sea, up to considerable distance from national shore bases”, it qualifies as a Blue Water Force.

Why Develop ‘Blue Water’ Capabilities? Almost unnoticed by the rest of the world, India has built one of the largest and most powerful navies in the world. However, there exist a number of drivers for further expanding its influence at sea.

- **Beijing’s String of Pearls:** It is perceived as encirclement by China’s strategic alliances and building of maritime facilities in Sri Lanka, Pakistan, Bangladesh and Myanmar. With China developing its own blue water navy, India aims to not only secure its own territory but also be able to project power farther than its shores.
- **Strategic Edge:** While most of its wars have been fought on land and air, a strong navy with nuclear deployment capabilities gives India a much-needed strategic edge. Also, few economists argue that India’s naval advantage might allow it to impede oil traffic heading for China through the Malacca Straits.
- **Energy Security:** India is expected to import 90 percent of its crude oil by 2030. India needs to be able to protect the energy routes to bring these resources to its shores.
- **South China Sea:** India might not be a primary player in the disputed waters, but it would not want to be excluded from exploring assets in the resource-rich South China Sea, as witnessed during China claiming control over the waters where an oil block was being explored by an Indian petroleum giant at Vietnam’s invitation (2014).
- **Balance of power in Asia:** As India juggles the dual imperative to simultaneously befriend and hedge against an economically and militarily rising China, the outcome of its blue water force will influence the balance of power in Asia for years to come.
- A blue water navy would provide muscle for all these strategic imperatives, enhance regional power projection capabilities, more effectively protect India’s expanding energy and trade routes, and enable stronger defence and trade ties with other nations.

INDIAN CYBER CRIME COORDINATION CENTRE (I4C)

The I4C is a seven-pronged system, which includes a cybercrime reporting portal, analysis of threats, capacity building, research and innovation, creating an ecosystem for cybercrime management and a joint cybercrime investigation platform for law enforcement agencies.

Overview About the I4C Scheme:

- To act as a nodal point in the fight against cybercrime.
- Identify the research problems/needs of Law Enforcement Agencies (LEAs) and take up R&D activities in developing new technologies and forensic tools in collaboration with academia / research institutes within India and abroad.
- To prevent misuse of cyber space for furthering the cause of extremist and terrorist groups
- Suggest amendments, if required, in cyber laws to keep pace with fast changing technologies and International cooperation.
- To coordinate all activities related to implementation of Mutual Legal Assistance Treaties (MLAT) with other countries related to cybercrimes in consultation with the concerned nodal authority in MHA.

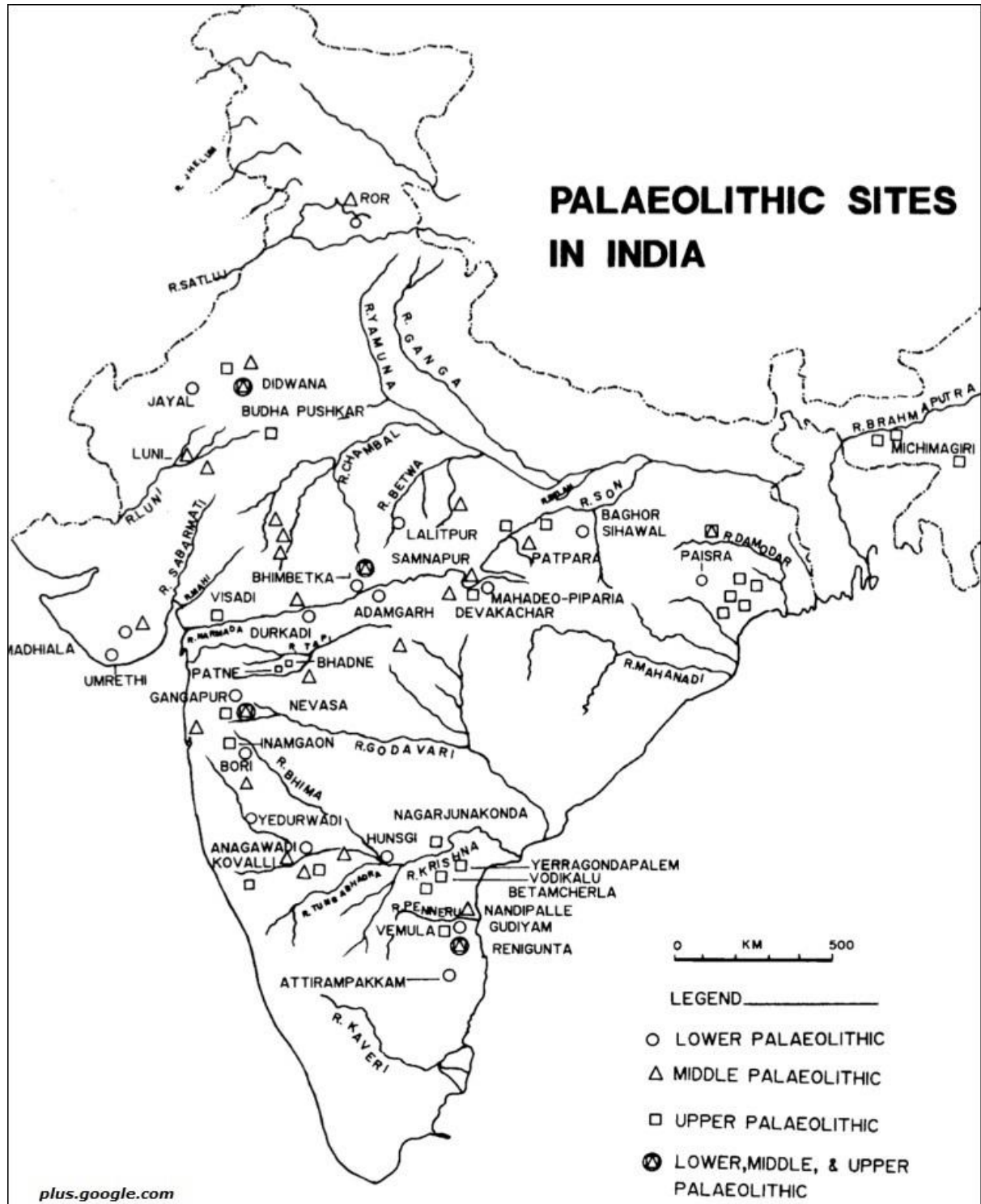
Components of Indian Cyber Crime Coordination Centre (I4C)

- National Cybercrime Threat Analytics Unit (TAU)
- National Cybercrime Reporting
- Platform for Joint Cybercrime Investigation Team
- National Cybercrime Forensic Laboratory (NCFL) Ecosystem
- National Cybercrime Training Centre (NCTC)
- Cybercrime Ecosystem Management Unit
- National Cyber Research and Innovation Centre

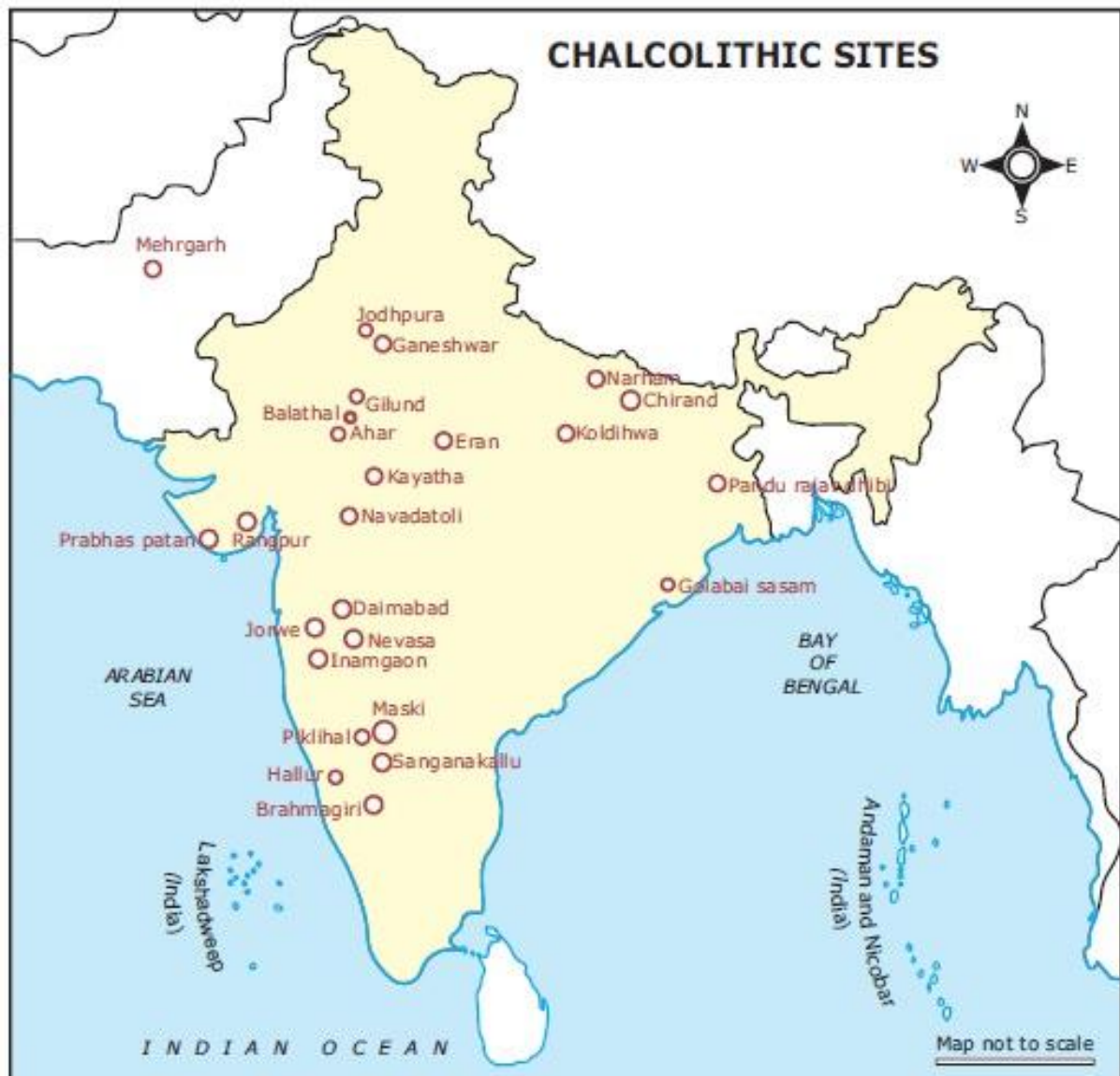
HISTORY AND CULTURE

(Ancient; Medieval and Modern)

PALAEOLOGITHIC-SITES



CHALCOLITHIC-SITES



MEGALITHIC-ERA

- The term 'megalith' is derived from Greek words 'megas', which means great and 'lithos' meaning stone. So, 'megaliths' refer to the monuments built of large stones.
- The term has a restricted usage and is applied only to a particular class of monuments or structures with the characteristic features, such as: those built of large stones and have some sepulchral (grave like), commemorative or ritualistic association.
- The urn or the sarcophagus containing the mortal remains was usually made of terracotta.
- In other words, the megaliths usually refer to the burials made of large stones in graveyards away from the habitation area. Hence, all monuments constructed of big stones are not megaliths.
- Mainly concentrated in the states of Maharashtra (mainly in Vidarbha), Karnataka, Tamil Nadu, Kerala, Andhra Pradesh and Telangana.

- The beginnings of the megalithic culture can be traced to c. 1000BC, though in many instances, the megalithic phase lasted from about the fifth to the first century BC and in a few places, this phase persisted even as late as the early centuries of the Christian era.
- The **Cholas, Pandyas and Keralaputras (Cheras) mentioned in Ashokan inscriptions** were probably in the late megalithic phase of material culture.
- Megalithic culture also finds several references in ancient Tamil Sangam literature.
- Manimekalai (5th century AD), the famous Buddhist epic, refers to the various kinds of burials namely cremation, burying the deceased in a pit, urn burial encapped with lid etc.
- The megalithic people used various types of pottery, including red ware. But the Black and Red Wares (BRW) seems to have been popular with them.
- Its usage was so widespread and important that initially black and red ware was called megalithic ware by archaeologists.
- The megalithic culture in South India was a full-fledged Iron Age culture when the great benefits of the use of this metal were fully realized by the people.
- The megalithic people preferred the slopes of hills for settlement and funerary structures.
- They generally did not settle on the plains or lowlands due to their thick forest cover though they would have easily cleared them through their knowledge of iron.
- The megalithic people produced paddy and ragi, but the area of cultivable land used by them was very limited.
- Megalithic people buried goods in graves with the dead bodies.
- This practice was based on the belief that the dead would need all these in the next world.
- Besides this, the megalithic people in the southern districts of Tamil Nadu buried the skeletons of the dead in urns made of red pottery in pits, which is noteworthy.

KAKATIYAS

- The 12th and the 13th centuries saw the emergence of the Kakatiyas.
- They were at first the feudatories of the Western Chalukyas of Kalyana.
- Initially, they ruled over a small territory near Warangal (Telangana).
- Prola II, a ruler of this dynasty, ruled in mid twelfth century. He extended his sway to the south and declared his independence.
- His successor Rudra pushed the kingdom to the north up to the Godavari delta. He built a fort at Warangal to serve as a second capital and faced the invasions of the Yadavas of Devagiri.
- The next ruler Mahadeva extended the kingdom to the coastal area.
- In A.D. 1199, Ganapati succeeded him. He was the greatest of the Kakatiyas and the first after the Satavahanas to bring the entire Telugu area under one rule.
- Ganapati Deva's daughter Rudramba succeeded him in A.D.1262 and carried on the administration. She suppressed the internal rebellions and external invasions with the help of loyal subordinates.
- Prataparudra succeeded his grandmother Rudramba in A.D.1295 and ruled till A.D.1323. He pushed the western border of his kingdom up to Raichur (Karnataka). He introduced many administrative reforms.
- He divided the kingdom into 75 Nayakships, which was later adopted and developed by the Rayas of Vijayanagara.
- In time of Prataparudra, the territory constituting Andhra Pradesh had the first experience of invasion from north.
- In A.D.1303, the Delhi Sultan Ala-ud-din Khilji sent an army to the kingdom. But Prataparudra defeated them.
- After that, another army under Malik Kafur invaded Warangal, Prataparudra yielded and agreed to pay a large tribute.
- When Ala-ud-din Khilji died, Prataparudra withheld the tribute. It provoked another invasion of the sultans.

- In another army attack, Ghiaz-ud-din Tughlaq sent a large army under Ulugh Khan to conquer the area but owing to internal dissensions he called off the siege and returned to Delhi.
- Within a short period, he came back with a much bigger army. In this attack, Prataparudra died. Thus ended the Kakatiya rule.
- The Kakatiya period was rightly called the brightest period of the Telugu history. The entire Telugu speaking area was under the kings who spoke Telugu and encouraged Telugu.
- During their rule, Saivism was the religion of the masses but intellectuals favoured revival of Vedic rituals.
- They sought to reconcile the Vaishnavites and the Saivites through the worship of Harihara (Harihara is the fused representation of Vishnu (Hari) and Shiva (Hara) from the Hindu tradition).
- Arts and literature found patrons in the Kakatiyas and their feudatories.
- Tikkana Somayaji wrote some cantos of the Mahabharata.
- It is notable that Sanskrit, which could not find a place in the Muslim-occupied north, received encouragement at the hands of the Kakatiyas.
- Prataparudra was himself a writer and he encouraged other literature.
- The Kakatiya dynasty expressed itself best through religious art.
- The Kakatiya temples dedicated mostly to Siva.
- They reveal in their construction a blending of the styles of North India and South India which influenced the political life of the Deccan.
- The most important of these temples are those at Palampeta, Hanamkonda (Telangana) and the incomplete one in the Warangal fort.
- The temple at Palampeta is described as the 'brightest gem in the galaxy of Medieval Deccan temple architecture'.
- It was constructed by Recherla Rudra, a general of Kakatiya Ganapati.
- The Thousand-Pillared Temple at Hanamkonda was built by the Kakatiya king Rudra. This temple, dedicated to Siva, Vishnu and Surya, is star-shaped.

SUFI ORDERS

Sufi order	Founder and place	Key points
Chishti	Khwaja Muinuddin Chisti, Ajmer	<ul style="list-style-type: none"> • It is the oldest silsila of India established by Khwaja Muinuddin Chishti in Ajmer. • He came to India during the reign of Muhammad Ghori. • Sultan Iltutmish built Muinuddin Chishti's dargah at Ajmer. • Chishti saints led an austere life and did not accept private property and state assistance. • Other notable saints of this order were Hamiduddin Nagori, Qutubuddin Bhaktiyar Kaki, Baba Farid and Nizamuddin Auliya. • Baba Farid preferred to shun the company of rulers and nobles and kept aloof from the state. For him renunciation meant distribution of food and clothes to the poor. Amongst his followers was the noted writer Amir Khusrau. • Sultan Iltutmish dedicated the Qutub Minar to Qutubuddin Bhaktiyar Kaki.
Suhrawardi	Shiabuddin Suhrawari, Multan	<ul style="list-style-type: none"> • It was brought to India by Bahauddin Zakaria who established this order in Multan. • Another Suhrawardi-Sufi Saint, Shaikh Sharfuddin Yahya Manairi propagated Sufi-doctrines in Bihar. He was a good scholar and

		<p>compiled several books. He laid great stress on the service of humanity.</p> <ul style="list-style-type: none"> Unlike Chishti saints, they lived a life of luxury and accepted state assistance.
Firdausi	Badruddin Samarqandi, Bihar	<ul style="list-style-type: none"> It was influenced by Suhrawardi order.
Naqshbandi	Khwaja Baqi Billah	<ul style="list-style-type: none"> This Order emphasized on observance of the laws of Shariat and denounced all innovations which were added afterwards to Islamic doctrines. Shaikh Ahmad Sirhindi was the successor of Khwaja Baqi Billah.
The Qadri order	Abdul-Qadir Gilani	<ul style="list-style-type: none"> The Qadri silsilah was popular in Punjab. Sheikh Abdul Qadir and his sons were supporters of the Mughals under Akbar. The pirs of this Order supported the concept of Wahdat al Wajud (this doctrine postulates that God and His creation are one). Among the famous Sufis of this order was Miyan Mir who had enrolled the Mughal princess Jahanara and her brother Dara Shikoh as his disciples.

BHAKTI SAINTS

Bhakti Saints	Key points
Ramanuja (11th – 12th century)	<ul style="list-style-type: none"> He was born in Tamil Nadu and had influence in Kanchi and Shrirangam. He was a Vaishnavite saint who believed in idol worship. He preached Visishtadvaita and emphasized on Bhakti over knowledge to attain God.
Nimabarka (12th century)	<ul style="list-style-type: none"> He was a Vaishnavite saint and believed in the philosophy of dualism or Dvaita (creator is different from creation). He worshipped Radha-Krishna and established his ashram in Vrindavana.
Madhvacharya (12th – 13th century)	<ul style="list-style-type: none"> He was a Vaishnavite and believed in dualism. He was against the ideas of Shankara and Ramanuja. He established Brahma Samapradaya.
Ramananda (15th century)	<ul style="list-style-type: none"> He was the disciple of Ramanuja. He worshipped Rama instead of Vishnu. He preached in Hindi instead of Sanskrit and taught people belonging to all varnas. However, he did not raise his voice against the caste system. Adi Granth (the sacred scripture of Sikhism) contains some of his preaching's. Kabir and Ravidas were Ramananda's disciples.
Kabir (15th – 16th century)	<ul style="list-style-type: none"> He preached Hindu Muslim unity and did not believe in idol worship, caste system and untouchability. Adi Granth contains some of his preaching's. Most of his teachings are compiled in Bijak.
Ravidas (15th – 16th)	<ul style="list-style-type: none"> He did not believe in idol worship. Adi Granth contains some of his preaching's. Mira Bai was his disciple.
Guru Nanak (15th - 16th century)	<ul style="list-style-type: none"> Most of his teachings are similar to that of Kabir. He used to sing with a rabab in his hand and also accompanied by a sarangi.

Dadu Dayal (16th – 17th century)	<ul style="list-style-type: none"> • He was Kabir's disciple and did not believe in idol worship and caste system. • His main seat of influence was Rajasthan. • He believed in leading a householder's life and was once summoned by Akbar to Fatehpur Sikri for religious discussions.
Chaitanya Mahaprabhu (15th – 16th century)	<ul style="list-style-type: none"> • He established Gaudiya Vaishnava dharma in Bengal and believed in advaita or non-dualism. • He was among the few saints who did not oppose idol worship. • He popularized the medium of Kirtana in Bhakti.
Surdas 16th – 17th century)	<ul style="list-style-type: none"> • He was the contemporary of Akbar and Jahangir. • He was a Krishna devotee and believed in idol worship. His major composition Sur Sagar was completed during Jahangir's reign.
Tulsidas 16th – 17th century)	<ul style="list-style-type: none"> • He was the contemporary of Akbar and wrote Ramacharitamans in Awadhi language. • His other compositions include Dohavali, Gitavali and Kavitavali.
Vallabhacharya (15th -16th century)	<ul style="list-style-type: none"> • He established Rudra Sampradaya and was a contemporary of Chaitanya Mahaprabhu. • He propagated Pushti Marga and Bhakti Marga to attain God.

KESHAB CHANDRA SEN

- Keshab Chandra Sen was a champion of women's rights.
- His ideology was mix of religious and social ideas.
- He condemned child marriage and was instrumental in having the marriage rites of his society recognized by law in 1872 (the Civil Marriage Act of 1872).
- He also advocated widow remarriage and inter-caste marriage.
- He attempted to incorporate Christian theology within the framework of Hindu thought.
- He established the **Nava Vidhan** in 1881 along with the newspaper 'New Dispensation' to disseminate his religious ideas and philosophy.
- Keshab witnessed a split in Brahmo samaj.
- Keshab and his followers founded the Adi Brahmo Samaj.
- Ex-followers of Keshab set up the Sadharan Brahmo Samaj.
- Prarthana Samaj was founded in Bombay by Atmaram Pandurang with the help of Keshab Chandra Sen. Other prominent leaders associated with it were M G Ranade, R G Bhandarkar.
- It took up the issues of caste system rejection, women education and widow remarriage.
- The **Indian Reform Association** was established by Keshab Chandra Sen.
- It represented the secular side of the Brahmo Samaj and included many who did not belong to the Brahmo Samaj.
- The objective was to put into practice some of the ideas Sen was exposed to during his visit to Great Britain.
- Its objective also included to create public opinion against child marriage, get Brahmo form of marriage legalized, promote status of women.

HENRY VIVIAN DEROZIO

- Derozio followed radical views and drawn his inspiration from the great French Revolution.
- Derozio taught in Hindu College, Calcutta.
- Derozians attacked old and decadent customs, rites and traditions.

- They carried on public agitation on public questions such as the revision of the company's Charter, the freedom of the press, better treatment for Indian labour in British colonies abroad, trial by jury, protection of the ryots from oppressive zamindars and employment of Indians in the higher grades of government services.
- Surendranath Banerjee describes Derozians as pioneers of modern civilizations of Bengal.

MULTIPLE CHOICE QUESTIONS

(50 MCQs)

Q1. Which of the following countries does not border Afghanistan?

- a) Turkmenistan
- b) Uzbekistan
- c) Tajikistan
- d) Kyrgyzstan

Q2. Which of the following countries is not a member of APEC?

- (a) India
- (b) China
- (c) Japan
- (d) Vietnam

Q3. Consider the following statements regarding RCEP:

1. It is the largest regional trading agreement.
 2. India has recently joined RCEP.
- Which of the above statement/s is/are correct?
- a. 1 only
 - b. 2 only
 - c. Both 1 and 2
 - d. Neither 1 nor 2

Q4. Kankasanturai Port lies in

- (a) Thailand
- (b) Myanmar
- (c) Malaysia
- (d) Sri Lanka

Q5. Consider the following statements:

1. The Iran nuclear deal framework was a preliminary framework agreement reached in 2015 between the Islamic Republic of Iran and US.
2. Iran nuclear deal is also known as Joint Comprehensive Plan of Action.

Which of the above statement/s is/are correct?

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

Q6. Fordo nuclear facility lies in

- (a) US
- (b) UK
- (c) Iran
- (d) France

Q7. Bru tribe belongs to

- (a) Mizoram
- (b) Manipur
- (c) Tripura
- (d) Meghalaya

Q8. Consider the following statements:

1. Chandragiri River is also known as Payaswini.
2. Chandragiri River flows in Kerala and Tamil Nadu.

Which of the above statement/s is/are correct?

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

Q9. Consider the following statements:

1. Willow Warbler is one of the longest migrating small birds that breeds throughout northern and temperate Europe.
2. Willow Warbler is frequently sighted in India in winter season.

Which of the above statement/s is/are correct?

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

Q10. Consider the following statements:

1. Plasma therapy is a medical procedure that uses the blood of a recovered patient to create antibodies on those infected individuals.
2. Plasma therapy is medically known as convalescent plasma therapy.

Which of the above statement/s is/are correct?

- a. 1 only
- b. 2 only

- c. Both 1 and 2
- d. Neither 1 nor 2

Q11. Consider the following statements:

1. Ecotone is a transition area between two biospheres.
2. Sere is an intermediate stage found in ecological succession in an ecosystem.

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

Q12. Consider the following statements:

1. Shola Grasslands are patches of stunted sub-tropical montane forest.
2. Shola Grasslands are found in higher montane regions of South India..

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

Q13. Consider the following statements:

1. Green List of IUCN is the first global standard of best practice of area based conservation.
2. Green List is a program of certification for protected and conserved areas.
3. India has two areas listed in the IUCN Green List Areas.

Which of the statements given above is/are correct?

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

Q14. Consider the following statements:

1. A wildlife sanctuary is defined by State Government via a Notification..
2. Some restricted human activities are allowed inside the Wildlife Sanctuary area.
3. There is no need to pass an act for alternation of boundaries of Wildlife Sanctuary.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only
- (d) All of the above

Q15. Consider the following statements about Ganges River Dolphin:

1. It has been recognized by the government of India as its National Aquatic Animal.
2. Nearly 50 per cent of the total population of Ganges River dolphins is found in Bihar.
3. The Ganges river dolphins are nocturnal.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only
- (d) All of the above

Q16. Which of the following are the global satellite navigation systems?

1. GPS
2. GLONASS
3. Galileo
4. BeiDou
5. QZSS
6. NavIC

Select the correct answer using the code given below:

- (a) 1, 2, 3, 4
- (b) 1, 3, 5, 6
- (c) 1, 2, 3, 5, 6
- (d) 1, 2, 3, 4, 5, 6

Q17. The RemoveDebris project is most closely related to

- (a) Great Pacific Garbage Patch
- (b) Global Warming
- (c) Solar storms
- (d) Kessler's syndrome

Q18. With reference to neutrinos, consider the following statements:

1. It is a subatomic particle with no electrical charge and a very small mass.
2. It travels close to the speed of light.

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

Q19. Arrange the following electromagnetic radiations in decreasing order of energy:

1. Gamma rays
2. Ultraviolet rays
3. X-rays

Select the correct answer using the codes given below.

- (a) 1-3-2
- (b) 2-1-3
- (c) 1-2-3
- (d) 3-1-2

Q20. Which of the following correctly explains 'Quasar'?

- (a) a highly magnetized, rotating neutron star that emits a beam of electromagnetic radiation.
- (b) bright distant objects that derive energy from black hole at the cores of galaxies.
- (c) objects which are too large to be called planets and too small to be stars.
- (d) interstellar clouds that contain a very high concentration of dust.

Q21. In India, it is legally mandatory for which of the following to report on cyber security incidents?

1. Service providers
2. Data centres
3. Body corporate

Select the correct answer using the code given below:

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

Q22. Which of the following has/have occurred in India after its liberalization of economic policies in 1991?

1. Share of agriculture in GDP increased enormously.
2. Share of India's exports in world trade increased.
3. FDI inflows increased.
4. India's foreign exchange reserves increased enormously.

Select the correct answer using the codes given below:

- (a) 1 and 4 only
- (b) 2, 3 and 4 only
- (c) 2 and 3 only
- (d) 1, 2, 3 and 4

Q23. With reference to 'Indian, Ocean Dipole (IOD)' sometimes mentioned in the news while forecasting Indian monsoon, which of the following statements is/are correct?

1. IOD phenomenon is characterised by a difference in sea surface temperature between tropical Western Indian Ocean and tropical Eastern Pacific Ocean.
2. An IOD phenomenon can influence an El Nino's impact on the monsoon.

Select the correct answer using the code given below:

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

Q24. Consider the following statements :

1. Climate and Clean Air Coalition (CCAC) to Reduce Short Lived Climate Pollutants is a unique initiative of G20.
2. The CCAC focuses on methane, black carbon and hydrofluorocarbons.

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

Q25. Mediterranean Sea is a border, following countries?

1. Jordan
2. Iraq
3. Lebanon
4. Syria

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
- (b) 2 and 3 only
- (c) 3 and 4 only
- (d) 1, 3 and 4 only

Q26. Sakteng Wildlife Sanctuary is situated in

- a) Bhutan
- b) Myanmar
- c) Sikkim
- d) Arunachal Pradesh

Q27. Seychelles is in

- (a) Africa
- (b) Asia
- (c) Oceania
- (d) Caribbean

Q28. Consider the following statements regarding RCEP:

- 1. It is a free trade agreement between the Asia-Oceania nations.
- 2. It was conceived at the 2011 ASEAN Summit in Bali, Indonesia.

Which of the above statement/s is/are correct?

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

Q29. Recently, Bhutan established formal diplomatic ties with

- (a) France
- (b) Italy
- (c) Germany
- (d) Denmark

Q30. Which of the following countries is the maximum contributor of FDI during 2019-20 into India?

- (a) Singapore
- (b) Mauritius
- (c) Netherlands
- (d) US

Q31. Consider the following statements:

- 1. A current account deficit occurs when a country spends more on imports than it receives on exports.
- 2. A trade deficit happens when a country's imports exceed its exports.

Which of the above statement/s is/are correct?

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

Q32. Consider the following statements:

- 1. A key metric for financial companies is the 'Price to Book Value' ratio (P/BV).
- 2. A P/BV ratio above 1 indicates that the market believes that the company can grow and generate Return on Equity (RoE).

Which of the above statement/s is/are correct?

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

Q33. Consider the following statements with reference to core sector industries:

- 1. Coal has got the largest weightage in the core sector.
- 2. Fertiliser has got the least weightage.

Which of the above statement/s is/are correct?

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

Q34. Consider the following statements:

- 1. Fiscal Deficit is the difference between the total income of the government (total taxes and non-debt capital receipts) and its total expenditure.
- 2. A recurring high fiscal deficit means that the government has been managing its expenses.

Which of the above statement/s is/are correct?

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

Q35. Consider the following statements:

- 1. Kala azar, also called visceral leishmaniasis, is a disease in which a parasite migrates to the internal organs such as the liver, spleen and bone marrow.
- 2. Among people with kala azar, there is similarity in the symptoms.

Which of the above statement/s is/are correct?

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

Q36. Consider the following statements:

- 1. POSHAN Abhiyaan is also known as National Nutrition Mission.
- 2. POSHAN Abhiyaan is a flagship programme to improve nutritional outcomes for children, pregnant women and lactating mothers.

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

Q37. Consider the following statements:

1. Bonda tribe belongs to the state of Tripura.
2. Bonda Tribe is one of the Particularly Vulnerable Tribal Groups (PVTGs).

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

Q38. Consider the following statements:

1. Sea Sparkle promotes the growth of microscopic algae called diatoms.
2. Microscopic algae form the basis of the marine food chain.

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

Q39. SITMEX is a trilateral naval exercise comprising of

- (a) Singapore, India and Maldives
- (b) Singapore, Indonesia and Thailand
- (c) India, Sri Lanka, Myanmar
- (d) India, Singapore, Thailand

Q40. Pare Hydro Electric Project is situated in

- (a) Ladakh
- (b) Sikkim
- (c) Uttarakhand
- (d) Arunachal Pradesh

Q41. Dikrong River is the tributary of

- (a) Teesta
- (b) Sutlej
- (c) Brahmaputra
- (d) Beas

Q42. Consider the following statements:

1. Information Management and Analysis Centre (IMAC) is the nodal agency for maritime data fusion.

2. IMAC was set up after 2004 Indian Ocean tsunami.

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

Q43. Consider the following statements:

1. Global conference on criminal finances and cryptocurrencies was launched in the year 2016.

2. The conference is an initiative of Interpol, Europol and the Basel Institute on Governance.

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

Q44. Consider the following statements:

1. A cyclone is a system of winds rotating clockwise in the Northern Hemisphere.

2. An anticyclone wind rotates counterclockwise in the Northern Hemisphere.

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

Q45. Consider the following statements:

1. National Green Tribunal (NGT) is a statutory body.

2. NGT is bounded by the procedure laid down under the Code of Civil Procedure.

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

Q46. Consider the following statements:

1. PUSA Decomposers have been developed for converting crop stubble into compost.

2. The decomposers are in the form of capsules made by extracting fungi strains that help the paddy straw to decompose.

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

Q47. Consider the following statements:

1. Jhum cultivation is also known as the slash and burn agriculture.

2. Jhum is also known as 'Podu' in Telugu.

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

Q48. Consider the following statements:

1. Sri Lankamaleswara Wildlife Sanctuary is in the state of Tamil Nadu.

2. Meghamalai wildlife sanctuary is in the state of Andhra Pradesh.

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

Q49. Consider the following statements:

1. Important Bird and Biodiversity Area (IBBA) was developed by BirdLife International.

2. IBBA's are identified only for terrestrial and freshwater environments.

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

Q50. Dead Sea does not border with

- (a) Israel
- (b) Jordan
- (c) Syria
- (d) All of the above

ANSWERS

1.	Ans. d)
2.	Ans. a)
3.	Ans. a)
4.	Ans. d)
5.	Ans. b)
6.	Ans. c)
7.	Ans. a)
8.	Ans. a)
9.	Ans. a)
10.	Ans. c)
11.	Ans. b)
12.	Ans. b)
13.	Ans. a)
14.	Ans. d)
15.	Ans. a)

16.	Ans. a)
17.	Ans. d)
18.	Ans. c)
19.	Ans. a)
20.	Ans. b)
21.	Ans. d)
22.	Ans. b)
23.	Ans. b)
24.	Ans. b)
25.	Ans. c)

26.	Ans. a)
27.	Ans. a)
28.	Ans. b)
29.	Ans. c)
30.	Ans. a)

31.	Ans. c)
32.	Ans. c)
33.	Ans. b)
34.	Ans. a)
35.	Ans. a)
36.	Ans. c)
37.	Ans. b)
38.	Ans. b)
39.	Ans. d)
40.	Ans. d)

41.	Ans. c)
42.	Ans. a)
43.	Ans. c)
44.	Ans. d)
45.	Ans. a)
46.	Ans. c)
47.	Ans. c)
48.	Ans. d)
49.	Ans. a)
50.	Ans. c)

SHIELD IAS

UPSC PRELIMS-2021

(TEST RELEASE SCHEDULE)

RAPID PRACTICE TEST (RPT)

January - Polity

10th January- Polity RPT 1
17th January- Polity RPT 2
24th January- Polity RPT 3
31st January- Polity RPT 4

February - Economy

7th February- Economy RPT 1
14th February- Economy RPT 2
21st February- Economy RPT 3
28th February- Economy RPT 4

March - Geography and Environment

7th March- G&E RPT 1
14th March- G&E RPT 2
21st March- G&E RPT 3
28th March- G&E RPT 4

April - History and Culture

4th April- History & Culture RPT 1
11th April- History & Culture RPT 2
18th April- History & Culture RPT 3
25th April- History & Culture RPT 4

FULL LENGTH TEST (FLT)

May - Current Affairs (FLT)

2nd May- Current Affairs FLT 1
9th May- Current Affairs FLT 2
16th May- Current Affairs FLT 3
23rd May- Current Affairs FLT 4

May & June- General Studies FLT

30th May- General Studies FLT 1
6th June- General Studies FLT 2
13th June- General Studies FLT 3
20th June- General Studies FLT 4